TECHNICAL DEPT.

AVIATION

The Oldest American Aeronautical Magazine

JANUARY 2, 1928 Issued Weekly PRICE 20 CENTS

Flying boat racing the "Yankee Doodle" at the National Motor Boat Races, Baltimore, Md.

VOLUME XXIV

NUMBER 1

Special Features

And What of 1928?
Looking Back at 1927
1927 Commercial Production

AVIATION PUBLISHING CORPORATION
250 WEST 57 STREET, NEW YORK

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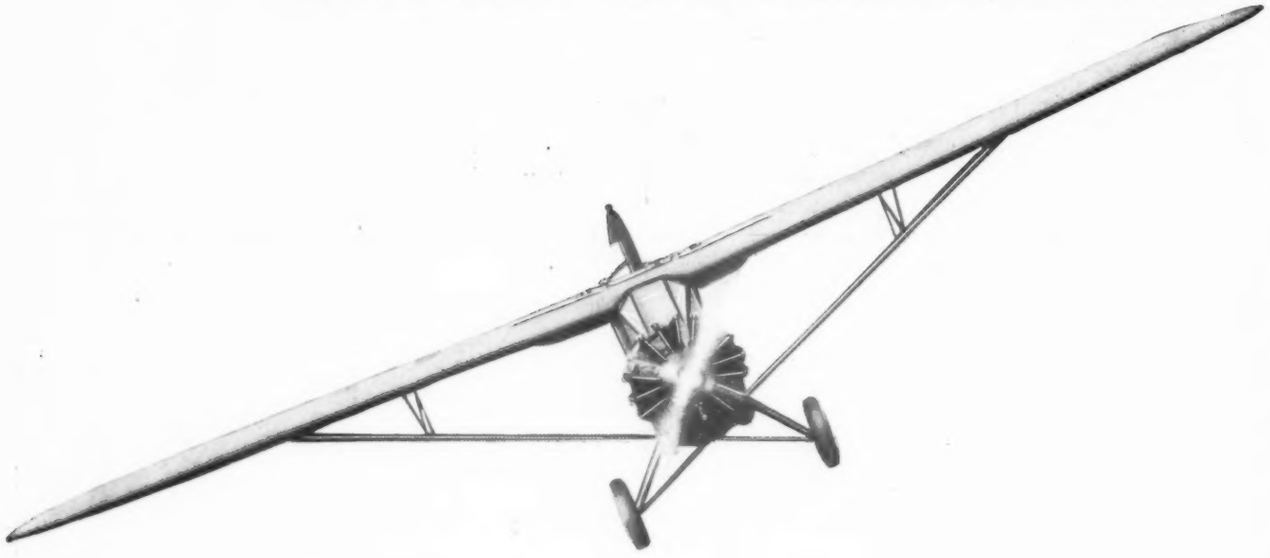

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In finish as well as performance the Wasp motored Fairchild Cabin Monoplane is unusual. From upholstery to landing gear there is evidence of master craftsmanship.

It is significant that any Fairchild plane will pass either the U. S. Army and Navy inspection or the inspection of the Canadian Government.

One Wasp motored monoplane has been delivered to the Royal Canadian Air Force and two others are now being completed for the Canadian Transcontinental Airways. Additional models are in production and deliveries can be made practically from stock.

Price, complete with Wasp Engine, Metal propeller, brakes and all modern improvements, $16,750, F. O. B. Farmingdale, N. Y.

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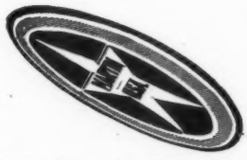

The Star in the Sky

Whether on the wing of a mail plane, a bomber, a naval reconnaissance plane or a commercial carrier, the tri-color star of The Glenn L. Martin Company holds the same significance to the experienced observer—*engineering supremacy—fine workmanship and unremitting care—experience dating back to the infancy of the art seventeen years ago*—DEPENDABILITY.

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SEVEN CURTISS "FALCONS"

A-3 "Falcon" Two Seater Ground-Attack Type

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The "Falcon" is being produced as an observation plane with either the Curtiss D-12, the Liberty, or the Pratt and Whitney Wasp engine, for the Army Air Corps and the Marine Corps.

It is also being produced as an attack plane with the D-12 or the Wasp engine for the Army Air Corps and the Marine Corps.

Thus — like the single-seater Curtiss "Hawk" — the original "Falcon" has evolved into a series of two-place types, each being particularly fitted to fulfill some special requirements of military air operations.

The CURTISS AEROPLANE AND MOTOR CO., Inc.

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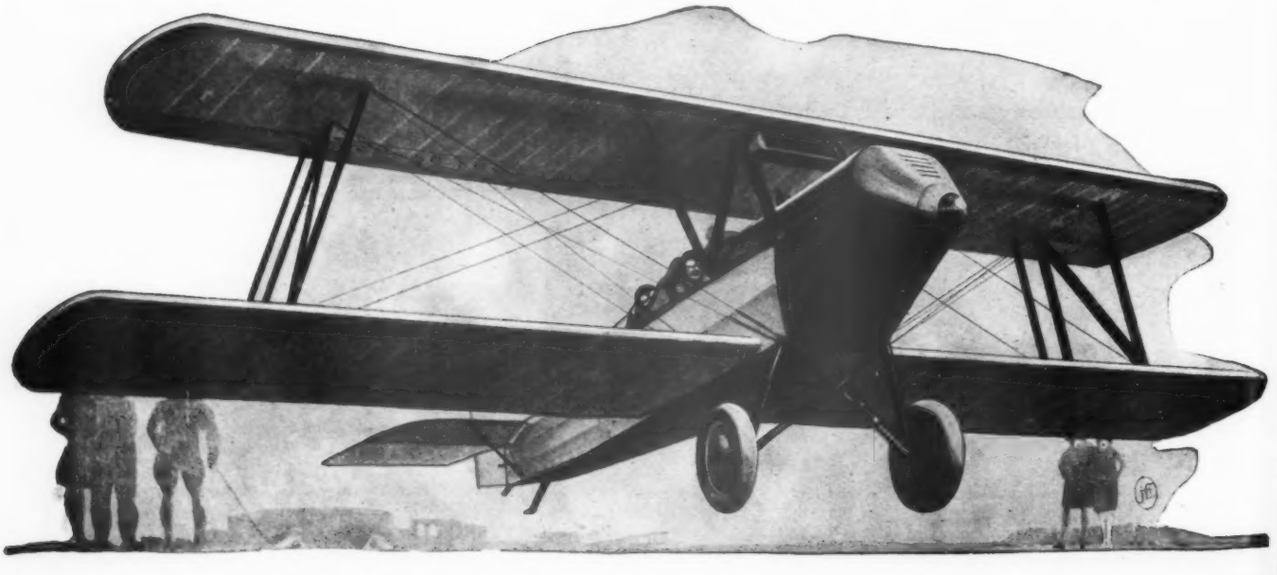

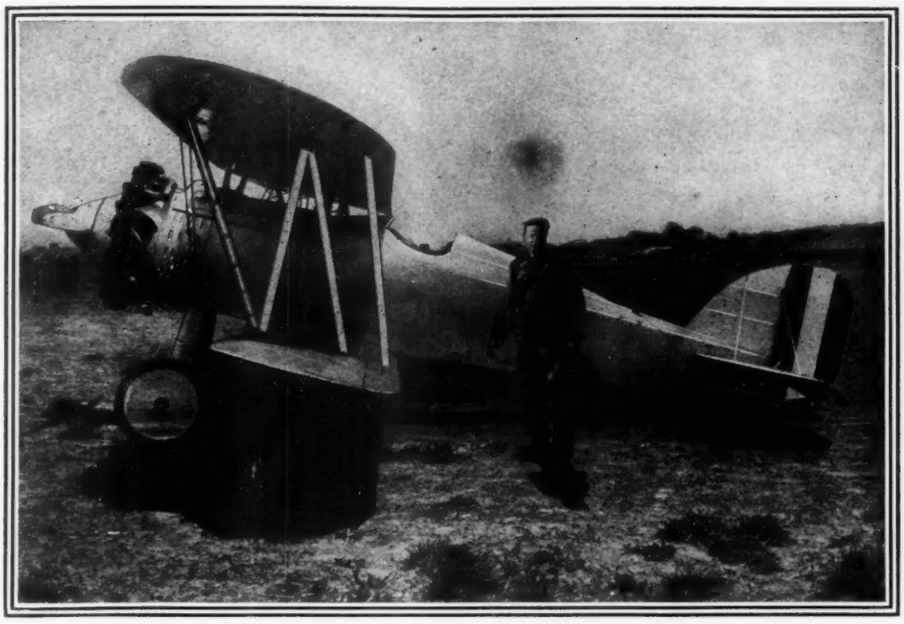

Lt. C. C. Champion, Jr., U. S. N. and the Navy
Apache (Wasp Engine)

World's Altitude Record

Lieutenant C. C. Champion, Jr., U. S. N. in a navy shipboard fighter has been officially credited with the World's altitude record for land planes with a height of 38,474 feet. Lieutenant Champion and the "Apache" are already the holders of the World's altitude record for seaplanes.

The "Wasp" has again proved its supremacy at altitude, which is so essential in the fighting single and two-place ships. This performance is further proof that American pilots and American flying equipment are second to none.

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OUR Aviation Manual, its contents recently revised, has been sent to many aviation enthusiasts in the middle west. Everyone who has seen a copy, comments upon the thorough manner in which the booklet covers its subject.

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Stanolind Aviation Gasoline *and* Stanolind Aero Oil

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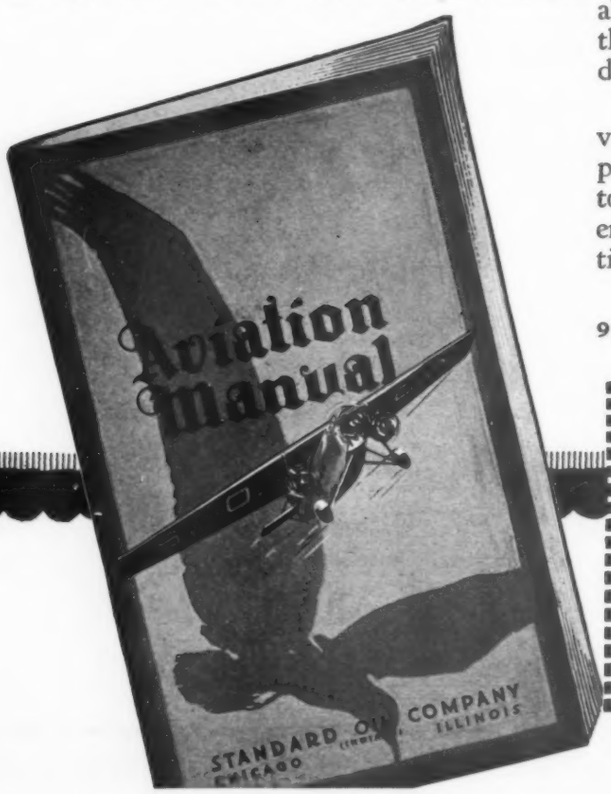

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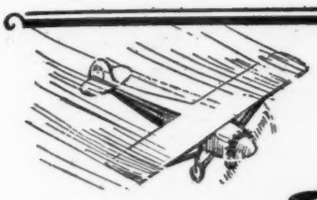

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THE RYAN-SIEMENS Airplane Engine is very accessible, easily assembled or dissembled, and runs clean and dry externally.... being completely free from oil leakage.

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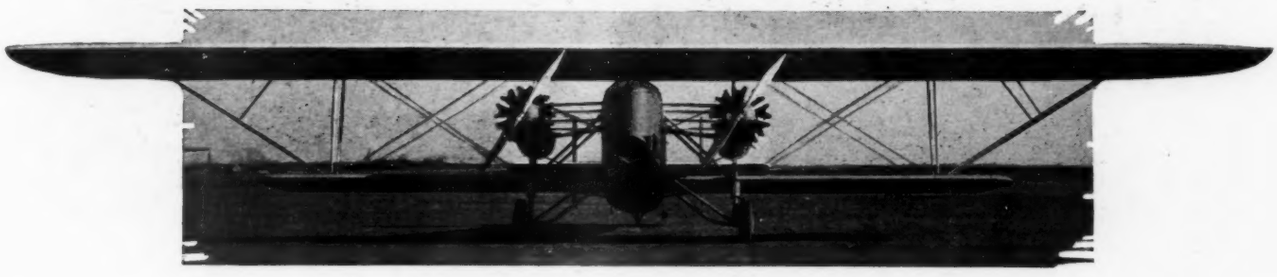
SIKORSKY

Achievements in 1927



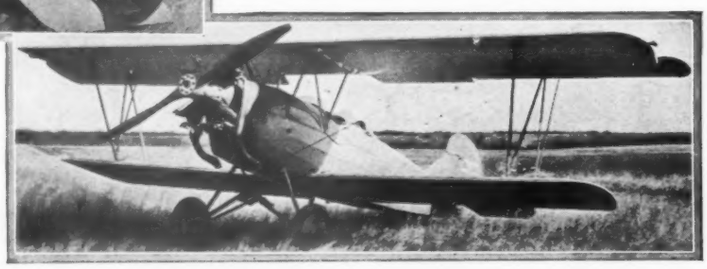
SIKORSKY Bombardment Plane Type S37B

SIKORSKY Twin-engined 18 Passenger Commercial Plane Type S-37.

SIKORSKY Twin-engined Amphibian 8-Passenger Type S36

Sikorsky Manufacturing Corporation
College Point, L. I., N. Y.

Study the trim lines of this handsome plane. Note how the exhaust is carried away by a neat manifold and discharged below the fuselage so as not to bother pilot or passengers. The in-built sturdiness is not visible to the eye, but the name "Travel Air" on the tail surface is the manufacturer's seal of approval, and that's all the assurance well-informed buyers want.



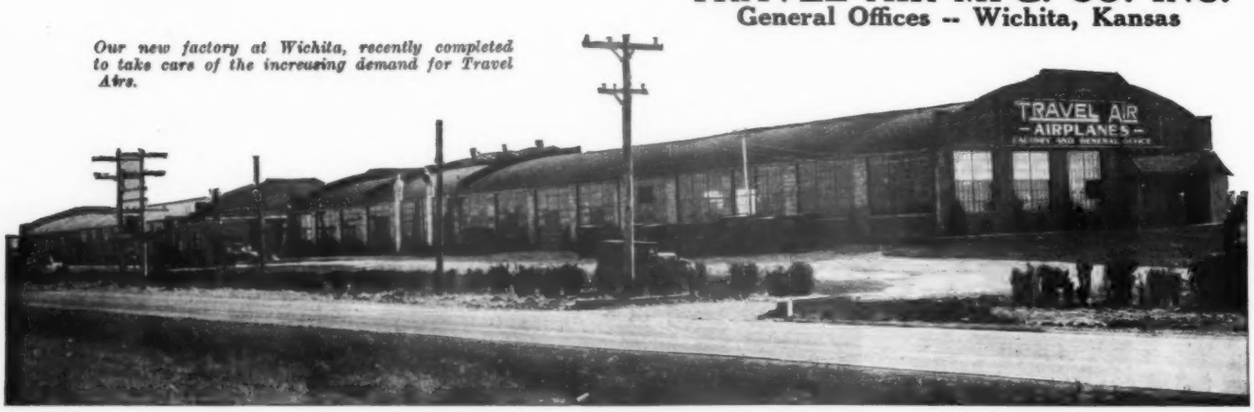
Introducing the New

TRAVEL AIR "CAM" Biplane

For the first time we picture the Travel Air 3-place biplane, with the new Fairchild-Caminez engine. Except for the engine mounting, this ship is substantially the same as the famous Whirlwind Travel Air. Initial tests have shown a splendid performance at low motor speed. Ask us for particulars if interested. Our new book "The Story of Travel Air" gives details.

TRAVEL AIR MFG. CO. INC.
General Offices -- Wichita, Kansas

Our new factory at Wichita, recently completed to take care of the increasing demand for Travel Airs.



ON THE WINGS OF PROGRESS

Earning and winning leadership/

Berry Brothers could successfully rest its case squarely upon the fact that 95 per cent of the commercial aircraft manufacturers of the United States use Berry products.

But this flat statement of truth leaves much unsaid. Berry Brothers' clean-cut leadership has been hard won and is even the more highly prized. The same progressive spirit that has won the confidence of aircraft manufacturers throughout the country will dictate the development of new products to meet new and changing conditions.

Our chemists and practical service men will continue to work in close cooperation with the research departments of army and navy aviation units and many aircraft manufacturers. No Berry formula will ever be changed except for a better one. We will continue to serve aviation faithfully and well, firm in the belief that the industry will soon take its place as a leader.

We will be glad to send responsible people our booklet, "Specifications for Aircraft Finishing," now in its second edition, revised and enlarged. Write for it—a brief note will do.

On the Wings *of* Progress/

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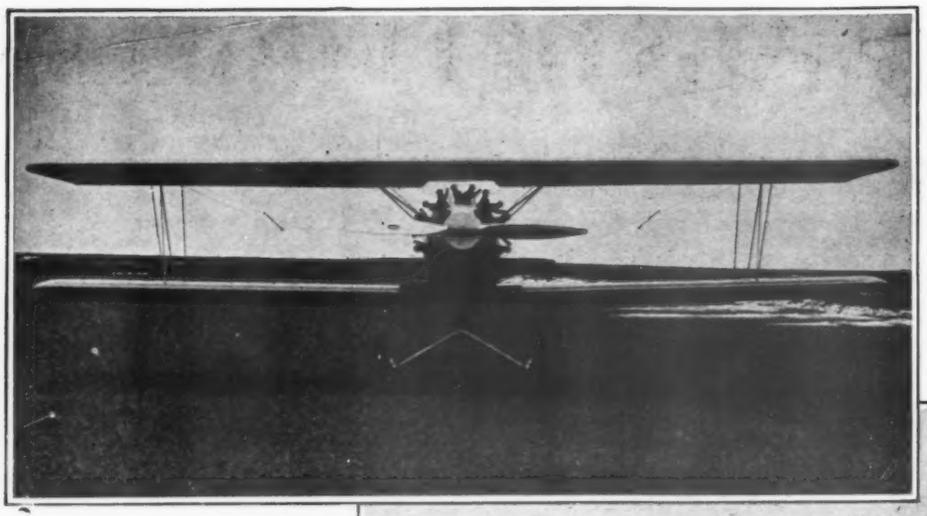
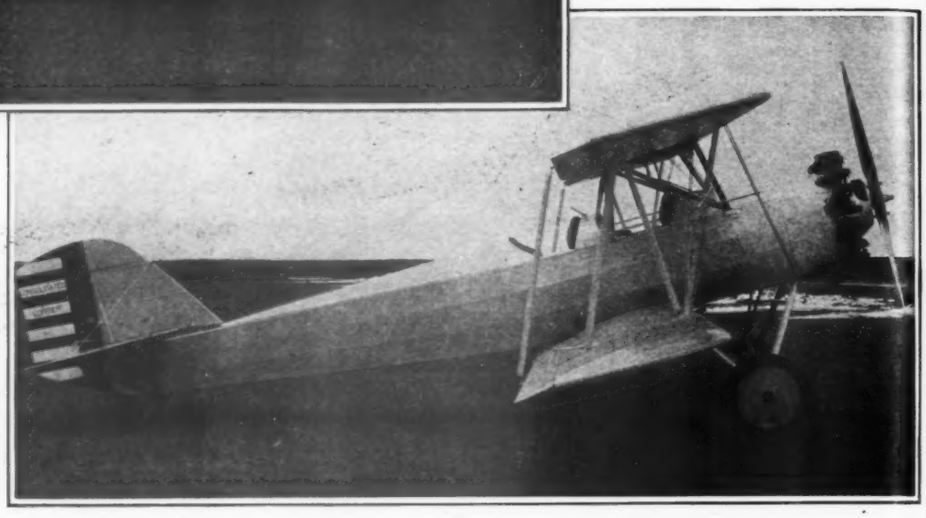


The Consolidated "Courier"

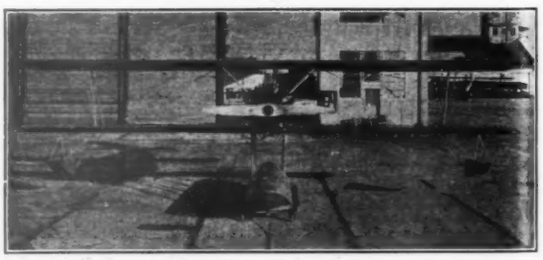


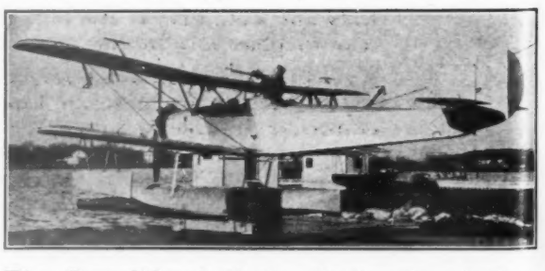
A Proven, Developed Airplane

A SPECIAL convertible type, using the Wright Whirlwind engine, designed to provide the following: complete dual control for training and practice flying, passenger carrying, stunts of every sort, cross-country flying (with remarkable ability to get in and out of small fields), gunnery practice both fixed and flexible, observation missions with radio. These conditions may be had either as a landplane or as a single float seaplane. Cockpits are very roomy and comfortable, with a large baggage compartment. Controls and installation in both cockpits are so arranged that either may be made quite clear for any desired purpose.

THE CONSOLIDATED COURIER is a proven, developed airplane. It is fast, very airworthy and it embodies the same features which have enabled its predecessors, the CONSOLIDATED TRUSTY and CONSOLIDATED HUSKY, to build such an unprecedented record for safety and durability in long service by the Army Air Corps and the Naval Air Service in training operations. CONSOLIDATED TRUSTY, HUSKY, and COURIER parts are practically all identical, making spares interchangeable.

The Consolidated "Husky"





The Consolidated Husky, Designed and Constructed by Consolidated Aircraft Corporation.

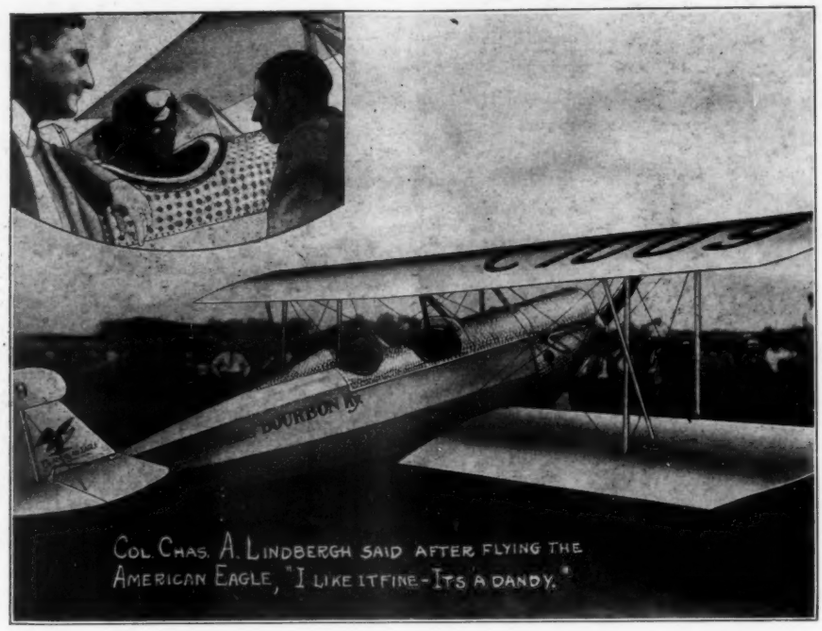
CONSOLIDATED AIRCRAFT CORPORATION

BUFFALO, NEW YORK

"I Like It Fine, It's A Dandy"

COLONEL CHARLES A. LINDBERGH

APPROVED TYPE CERTIFICATE No. 17.



Burnished Aluminum Motor and Cockpit Cowling and Streamline Head Rest No Extra Charge

The above picture was taken August 18th, 1927 at Kansas City Airport just after Col. Lindbergh completed a flight in an American Eagle.

The American Eagle

Fast Being Recognized as

"MASTER OF THE SKIES"

A proven developed airplane, fast and entirely airworthy; quick takeoff, slow landing speed; high cruising speed, excellent maneuverability. Powered with OX5, 90 H. P. Curtiss motor, develops a speed of 99.6 m.p.h. and is capable of reaching an altitude of 1500 feet in two minutes and five seconds.

At the Armistice Day races held at the Kansas City Airport, the American Eagle won every event against a field of entries in which every make of new production planes with one exception of this type was represented. *The American Eagle does not know defeat in performance contests.*

Manufactured under Approved Type Certificate No. 17. Its construction throughout is the best. There has never been a structural failure with an American Eagle.

Distributor contracts are rapidly being closed in every section of the country. Territory is now available in fewer than twenty states. Knowing what a wild scramble there was last season to get delivery, the wise dealer and pilot is going to BUY NOW. If you are contemplating a dealer connection for this type plane, we suggest you come to a decision at an early date.

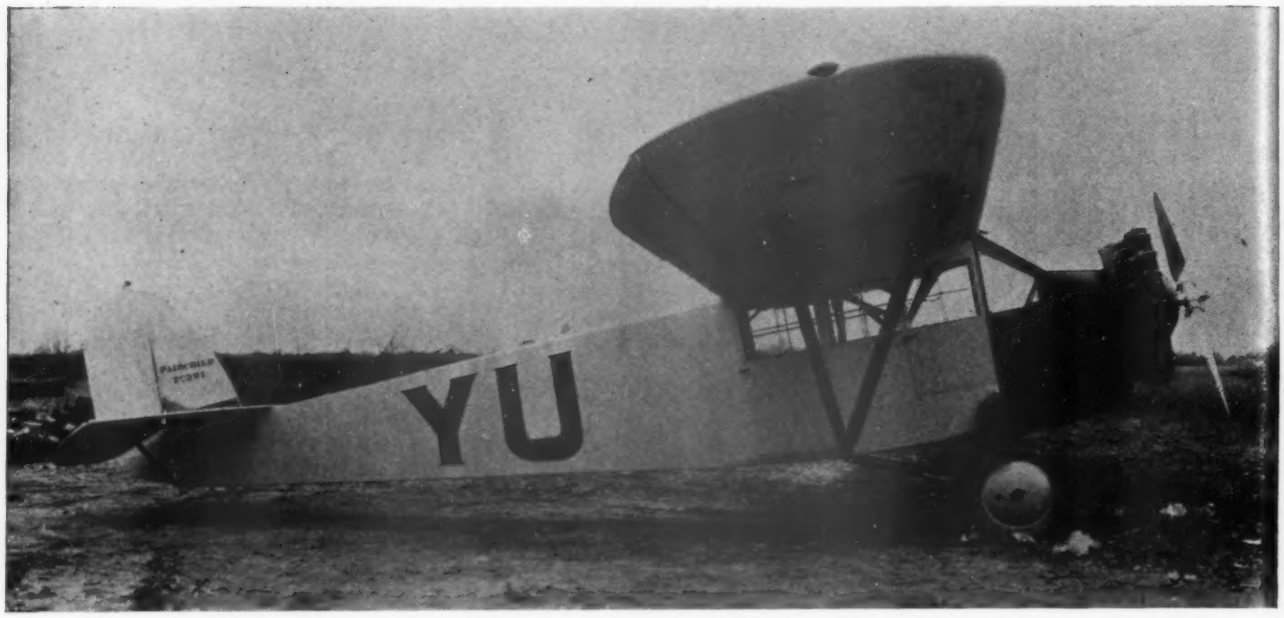
With OX5 Motor, Hartzell Propeller, Dual Controls

$2515

American Eagle Aircraft Corporation

2300 HARRISON STREET
KANSAS CITY, MISSOURI

THE TREND OF AMERICAN AVIATION



Latest Fairchild Cabin Monoplane (Wasp Engine)

The "Wasp" and the Cabin Plane

IT is significant that the Royal Canadian Air Force has selected the "Wasp" equipped Fairchild for their difficult photograhphic service in the Dominion. The relatively light but powerful 400 hp. "Wasp" provides the quick take-off and climb as well as the high speed which is necessary to meet their requirements.

The Canadian Transcontinental Airways, Ltd. also will employ similar equipment on their air mail route.

American aircooled radial engines are becoming synonymous with commercial aviation in America. In Naval and Military ships, as well as in the air mail and other commercial services, the Pratt & Whitney "Wasp" is doing its share to improve the breed.

PRATT & WHITNEY, U.S.A. DEPENDABLE ENGINES

THE
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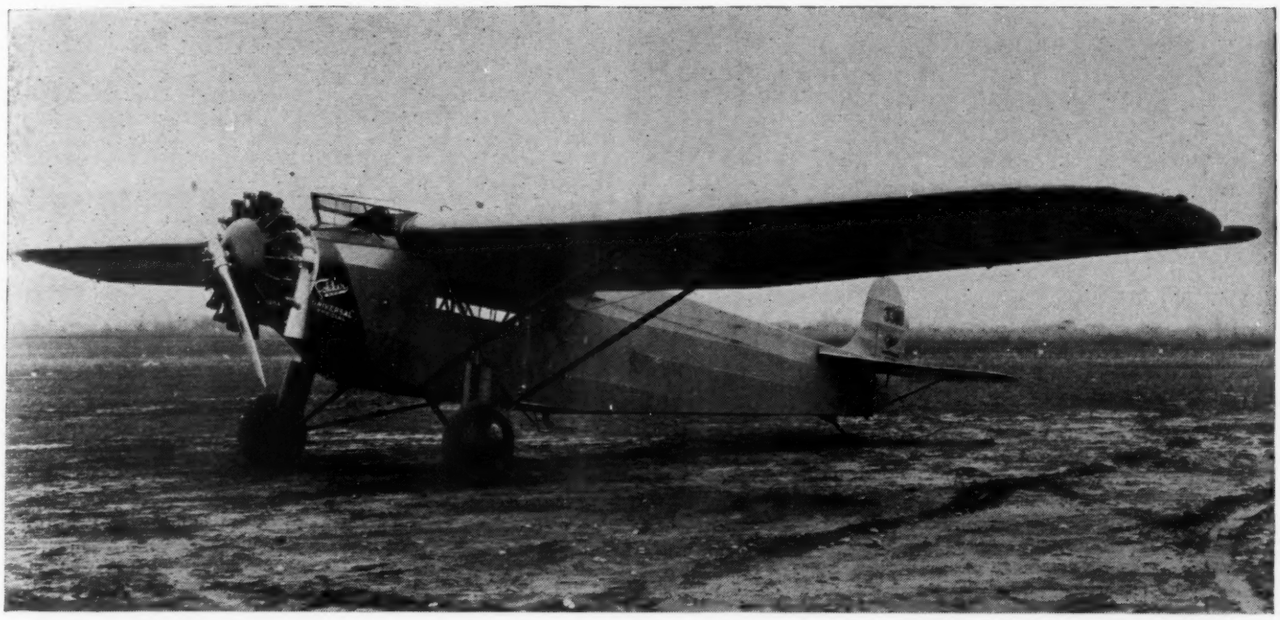
THE TREND OF AMERICAN AVIATION



The Wasp in a Fokker Super-Universal

The "Wasp" and the Cabin Plane

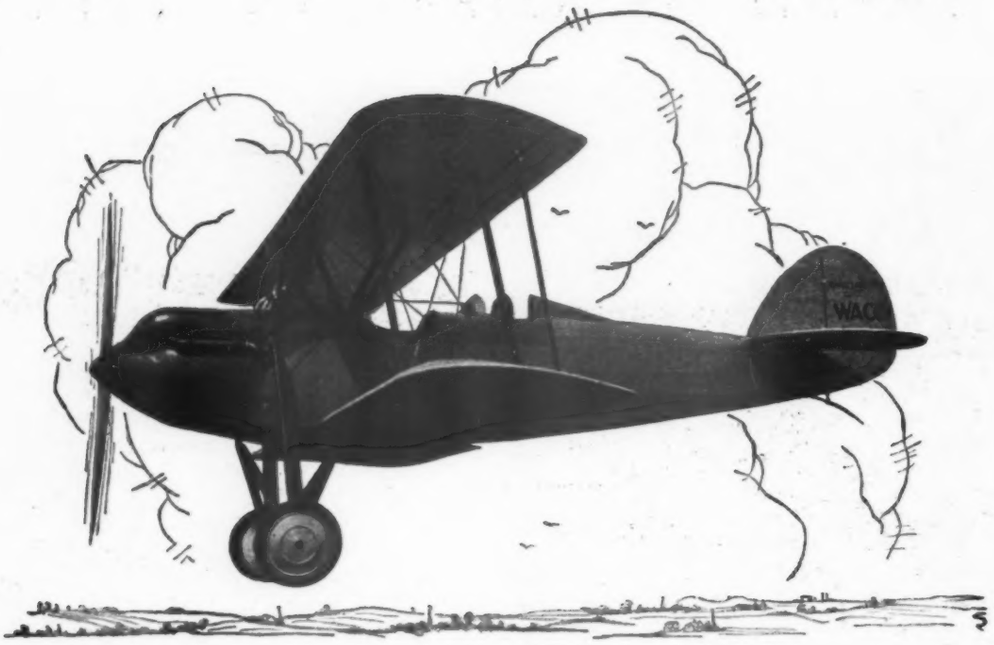
WHERE increased performance is desired Fokker now has available the Super-Universal, "Wasp" equipped. A new standard of performance has been set up.

The "Wasp" has proved itself in the Navy single and two-seat fighting planes, and in the Amphibian observation types. The Super-Universal is just another indication that commercial aviation is quick to take advantage of improved types of engines.

PRATT & WHITNEY U.S.A. DEPENDABLE ENGINES

THE
PRATT & WHITNEY AIRCRAFT CO.
HARTFORD CONNECTICUT

DEPENDABLE ENGINES



Airplane Performance Traditional With WACO

WACO performance and dependability are traditional — wherever you've heard airplanes mentioned — whatever you've heard about them you've never heard anything but praise for the performance and dependability of the WACO.

There is nothing untried, unproved, or in any way experimental about the WACO. It embodies the engineering principles gained in the ten years of airplane construction.

Take the stick of this acknowledged leader and feel for your self the almost arrow like take-off and quick climbing ability. Give her the gun and feel the thrill of its speed. Set her stabilizer and fly with hands off. Bring her down and land on the cushion like hydraulic shock absorbers without the slightest jolt or jar. When you have done this you will realize why every one that has seen the WACO is acclaiming it as the outstanding leader.

Write now for complete details.

Approved Type Certificate No. 13

WACO
AIRPLANES
MANUFACTURED BY ADVANCE AIRCRAFT CO., TROY, OHIO

AVIATION

The Oldest American Aeronautical Magazine

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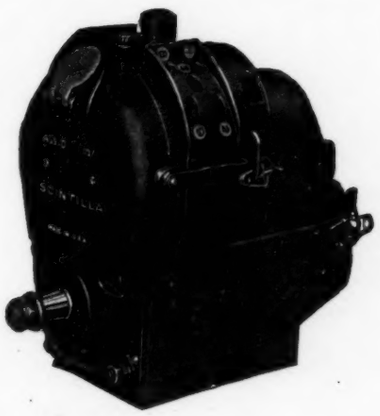
The Spirit of St. Louis

All the splendid trans oceanic flights of the past year have been made with the Wright "Whirlwind" Engine

Equipped With

SCINTILLA

Aircraft Magnetos



SCINTILLA MAGNETO COMPANY
SIDNEY, NEW YORK
Contractors to the U. S. Army and Navy

1928

A YEAR ago who would have dared to predict such feats as were actually accomplished in 1927 by American aviators? Who would have imagined the overwhelming public interest these feats aroused? Who could have foreseen the tremendous impetus given to American commercial aviation?

Landing fields have sprung up all over the country. Cities and towns have fought to be on the line of newly established airways. Government and private flying schools have been inundated with requests for flight instruction. Factories have waiting lists of customers for planes.

Greatest of all — the rank and file of America is becoming *air-minded!*

How shall we use this rich legacy of 1927? How can it be employed to the greatest advantage of commercial aviation in 1928? It is well worth while to give this serious thought.

Let us show the public such a record of safety as will convince the most timid.

Let us show such progress in the practical application of flight to the needs of the business world that American business will think of the airplane in the same terms it now thinks of trains, ships and motor trucks.

Let us give every encouragement to the pioneer whose aims are the advancement of aviation. But let us discourage reckless publicity seeking.

Let us all do everything in our power to further the cause of American aviation, knowing that each will benefit from anything which benefits the whole industry.

Let us make 1928 show an even greater advance over 1927, than 1927 showed over any year preceding.

The Stout Metal Airplane Company
DIVISION OF FORD MOTOR COMPANY
Dearborn, Michigan

AVIATION

The Oldest American Aeronautical Magazine

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1928 -- Aerial New Year

TO EXPRESS the wish that 1928 will be an aerial year infers that it will be a happy one as well for those who are engaged in aeronautical work. It is, therefore, the wish of AVIATION that each one of its readers may enjoy an Aerial New Year.

Every sign points in the direction of prosperity and advancement. And what is even more important happiness and courageous optimism pervade the whole aeronautical world. With such a spirit the aeronautical industry enters the closing period of the first quarter century of flight.

Next December the Twenty Fifth Anniversary of the first flight of the Wright Brothers will be celebrated. The world will do homage to American inventive genius as represented by the creators of a new art. By then the aerial harvest of the year will be in. The wish of AVIATION for all its readers is that they may garner their share of success to the fullest. Welcome to 1928.

The Engine Situation

AS EVERYONE knows the development of aerial service in this country has been due almost entirely to the stock of war surplus Curtiss OX5 engines which enabled manufacturers to equip their planes with extremely cheap but reliable engines. These engines have retailed for as low as $250 and in large quantities there were certain sales for less than one hundred dollars. At the present time these engines are being held for prices of $700 with the expectation that they will shortly go higher. An exact census of the stock on hand is not available but various people who should know estimate the stock in the hands of the larger manufacturers as between six and eight hundred while the number of new OX5 engines in the hands of small manufacturers and dealers is purely guess work but undoubtedly considerable. There are also very considerable stocks of used OX5 engines and quite a few Hispano-Suiza engines most of which are being closely held.

These estimates may be wrong either one way or the other but there is no doubt that next year will see the almost complete exhaustion of war surplus engines and the substitution of modern engines which will undoubtedly be more expensive and which will force an increase in the price of the three seater planes of at least fifty per cent. over present prices. This may cause a temporary check in the sale of planes but in the long run it will be highly advantageous. It should be remembered that the Jenny was replaced by planes costing four or five times as much and that the better operators made more money out of the more expensive planes. The same thing will hold true if a good commercial engine of lower power is developed. Not only will the planes equipped with these lighter engines be more efficient but the maintenance, the endurance and the reliability will be so much increased that in the long run they will be considerably cheaper to operate than the war surplus engines.

Cross Country Flying

NON FLIERS especially motorists are usually puzzled that aviators on cross country flights are so apt to get lost. To their mind and even to the mind of many who have flown, the earth from the air is laid out like a gigantic map. This is so on clear days but often the particular piece of ground that one sees is as hard to fit into the small scale map as are the pieces of a jig saw puzzle. On foggy days however there is practically no resemblance between the simplest features that are marked down on a map and the mass of hazy detail which is viewed from an airplane. Paradoxical as it may seem, an aviator often loses his way because he sees too much and no single feature sticks in his mind. The motorist sees only the features on either side of the road and it is easier to pick out and remember individual objects. The aviator when he can see at all has such a wide vision that it takes special training to pick out special features which can be identified or remembered. It must also be remembered that in some planes part of the landscape is cut off by the wings or fuselage and that the higher the plane the greater is the extent that is cut off.

The faculty of picking out or remembering features in the landscape can be improved with practice and some people undoubtedly have a natural aptitude for the thing which combined with a sense of direction and locality amounts almost to genius. Even the best and most experienced of pilots can get lost on cross country flights in clear weather. Poor pilots, in foggy weather, usually "sit down" in a cow pasture if they are lucky enough to find one. When every hamlet and town has an airport where a plane can safely stop and ask the way the problem will not be so serious. In the mean time many towns and factories are doing a useful work by painting names and direction arrows on the roofs of buildings.

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Looking Back *at* 1927

A Resume of Airplane Activities During the Greatest Year in the History of American Aeronautics

LOOKING BACK at 1927, the year which in all probability will go down in the records as the greatest in the history of American aeronautics, Col. Charles A. Lindbergh's New York to Paris flight stands out unquestionably as the most spectacular feat of all. It was upon that famous pilot's arrival on the other side of the Atlantic that the unairminded in this country first began to give serious thought to the possibilities of the airplanes. And to those selfsame people, employed outside of the industry, that historic flight was perhaps the beginning of airplane accomplishments during the past year.

However, to make a complete resume of airplane endeavors, successful and unsuccessful, for 1927, one has to go back further than the date of Colonel Lindbergh's flight; in fact back to April 14, to be exact.

At noon on that day Clarence D. Chamberlin and Bert Acosta landed their Bellanca monoplane "Columbia" on Roosevelt Field, L. I., after having remained in the air for 51 hr., 11 min., 25 sec. This flight constituted a new world's endurance record, breaking by 5 hr., 50 min. and 26 sec. the former record established by the French pilots Drouhin and Landray at Etampes-Chartes, France, on Aug. 7-8-9, 1925. Chamberlin and Acosta had taken off Roosevelt Field at 9:30 Tuesday morning, April 12, with a load of 385 gal. of gasoline and 20 gal. of oil. At the take off the plane carried a total useful load of 3080 lb. The Bellanca monoplane was designed by Guiseppe M. Bellanca and was powered with a Wright Whirlwind engine.

The next airplane feat of note was accomplished on May 2, when the Pan-American fliers carrying a message of good will from President Coolidge to the Latin-American countries, had completed their 20,000 mi. flight at Bolling Field, Washington, D. C. The flight started Dec. 21, 1926, from San Antonio, Tex., and continued down the east coast of Mexico across the Isthmus of Salina Cruz to Panama with stops at Honduras and Nicaragua. From Colon the flight went to Colombia and then returned to the Canal Zone and continued along the west coast of South America as far as Valdivia, Chile, where the Andes were crossed to the Atlantic side, to Bahia-Blanca, Argentine. Following the east coast the planes flew to Buenos Aires and made a 1,400 mi. round trip up the Parana River to Asuncion, Paraguay. Next came Brazil,

Comdr. Richard E. Byrd's plane "America" being prepared for its great flight across the North Atlantic.

the Guianas and Venezuela. At Trinidad the flight left the mainland and made a series of hops which covered the lesser Antilles, Porto Rico, the Dominican Republic, Haiti, Cuba and the return to Langley Field, Va., and Bolling Field, Washington. Five Loening Amphibian planes (Liberty engine) under the leadership of Maj. Herbert A. Dargue started the flight, but due to a fatal accident in Buenos Aires in which Capt. Clinton F. Woolsey and Lieut. John W. Benton were killed, only four of the planes returned to the United

The four Loening Amphibian airplanes of the Pan-American flight lined up at Bolling Field, Washington, D. C.

States. The planes that made the complete trip were, the New York 2nd—Maj. Herbert A. Dargue and Lieut. Ennis C. Whitehead; The San Antonio—Capt. Arthur B. McDaniel and Lieut. Charles McK. Robinson; The San Francisco—Capt. Ira C. Eaker and Lieut. Muir S. Fairchild; and The St. Louis—Lieut. Bernard S. Thompson and Lieut. Leonard D. Weddington. Upon arrival of the fliers at Bolling Field,

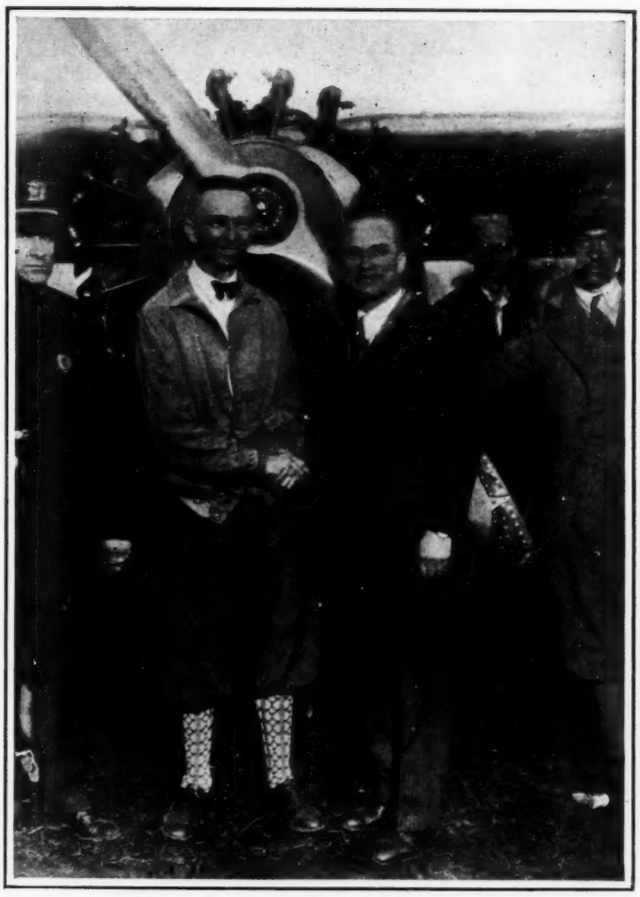
The famous "Spirit of St. Louis" en route from Paris, France, to Brussels, Belgium.

they were all rewarded by President Coolidge with the Distinguished Flying Cross which has been voted by Congress. Posthumous awards of the Distinguished Flying Cross also were made to the airmen who did not return.

The next airplane achievement, the greatest of the year, was Colonel Lindbergh's 3610 mi. non-stop flight from Roosevelt Field, L. I., to Le Bourget air field near Paris, France. This flight which was made in 33 hr. 29 min. 30 sec., at an average speed of 108 m.p.h., was started at 6:52 A.M. Friday, May 20, and was completed at 10:24 P.M., (Paris time) Saturday, May 21. So much has been said and written of this great flight that a review would be mere repetition of daily conversation. However, as a matter of record the great aerial journey was made in a Ryan monoplane, the "Spirit of St. Louis", powered by a Wright Whirlwind engine. At the take off of the trans-Atlantic flight the Spirit of St. Louis lifted over three times its own weight or 3.13 times its empty weight to be exact. The empty weight of the plane without special equipment was 1,695 lb., and the gross weight was 5,300 lb.; empty but complete with instruments and special tanks the plane weighed 2,150 lb. Its useful load with 450 gal. of gasoline, pilot, etc., was 3,605 lb. or 2.12 times the net empty weight. The plane which was built according to Col. Lindbergh's specifications was constructed in less than 60 days. Prior to his start from Roosevelt Field, Colonel Lindbergh flew the plane from San Diego to Roosevelt Field with one stopover at St. Louis, where the plane was christened, in a total flying time of 14 hr., 5 min. In making the Paris flight the former air mail pilot won the Orteig prize of $25,000.00 which had been offered by Raymond Orteig.

On Memorial Day Ward T. Van Orman won the National Balloon Race for the third time and gained permanent possession of the Litchfield cup. Van Orman had as his aid W. W. Morton and together they piloted the Goodyear Rubber Co., entry from Akron, Ohio, to a sandy beach near Bar Harbor, Me., a distance of some 718 mi. E. J. Hill and his aid A. E. Schlosser in the Detroit Flying Club No. 3, captured the second prize when they came to earth at Skowhegan, Me., after covering a distance of about 650 mi. Third honors went to Captain Kepner and his aid Lieut. W. O. Earickson in the Army Entry 3, which came to earth at Biddeford, Me., after a flight of about 595 mi. These three leading contestants were selected to represent the United States in the Gordon Bennett International Balloon race which on account of Van Orman's victory in 1926, was held at Detroit on Sept. 10. Fifteen balloons took part in the elimination race and included four Army, three Navy and 8 civilian entries.

Beaten to the take off for a trans-Atlantic attempt by Colonel Lindbergh in the Spirit of St. Louis, Clarence D. Chamberlin on Saturday, June 4, took the endurance record breaking plane "Columbia" off Roosevelt Field and started a long distance flight of 3,905 mi. Chamberlin carried Charles A. Levine as a passenger and in 43 hr. they flew from Roosevelt Field to Helfta, Germany, where they landed at midnight, Sunday, June 5, and established a new world's non-



Clarence Chamberlin and Charles A. Levine shaking hands prior to the start of their non-stop flight to Germany.

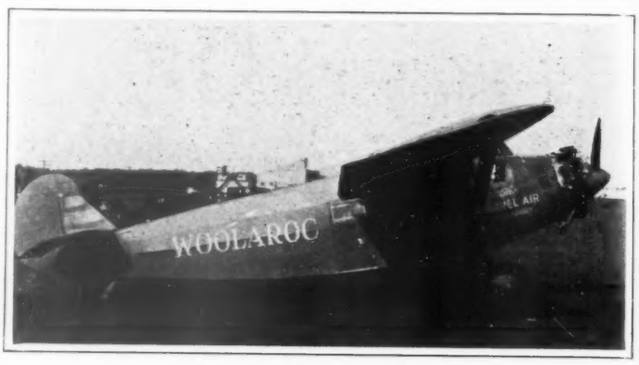
stop, long distance record. Their ultimate goal was the city of Berlin but a shortage of gasoline brought about the landing at Halfta. After taking on fuel Chamberlin took the Columbia into the air again but owing to the compass having been put out of commission by the forced landing, and going astray in bad weather, a second forced landing was made in a marsh near Kottbus, Germany. Later when repairs were made the flight was continued to the German capital. The plane took off with a total of 555 gal. of gasoline

and the total weight of the plane was approximately 5,450 lb.

On June 22, fourteen planes took off from the Ford Airport at Detroit, Mich., to start the 1927 National Air Tour. The 3,800 mi. route flown was from Detroit to Buffalo to Geneva, Schenectady, Boston, Hartford, New York City, Philadelphia and Baltimore. From this point the route doubled back across the mountains of Pennsylvania to Pittsburgh and thence to Cleveland, Kalamazoo, Dayton, Columbus, Cincinnati, Louisville, Memphis, Pine Bluff, Dallas, Oklahoma City, Tulsa, Wichita and Omaha. From this point the route went east to Moline, Hammond, Grand Rapids and on to Detroit. The Tour ended on July 12, and was won by a Stinson-Detroiter monoplane, piloted by Eddie Stinson. Stinson's point score was 9853.7. A Hamilton monoplane piloted by Randolph G. Page won 2nd place with a total of 7863.5 points, and a Mercury biplane piloted by Harvey C. Mummert won the 3rd place with a total of 7807 points. The first and second place winning planes were powered with a single Wright Whirlwind engine and the third place winning plane was powered with a Curtiss C-6A engine. Of the 14 planes which started one was withdrawn for personal reasons while another was so seriously delayed by engine trouble that it was disqualified for the prize money although it completed the tour. The regularity with which the competitors completed the 25 legs of the Tour was a wonderful demonstration of the reliability which has been achieved by modern airplanes and engines handled by experienced pilots.

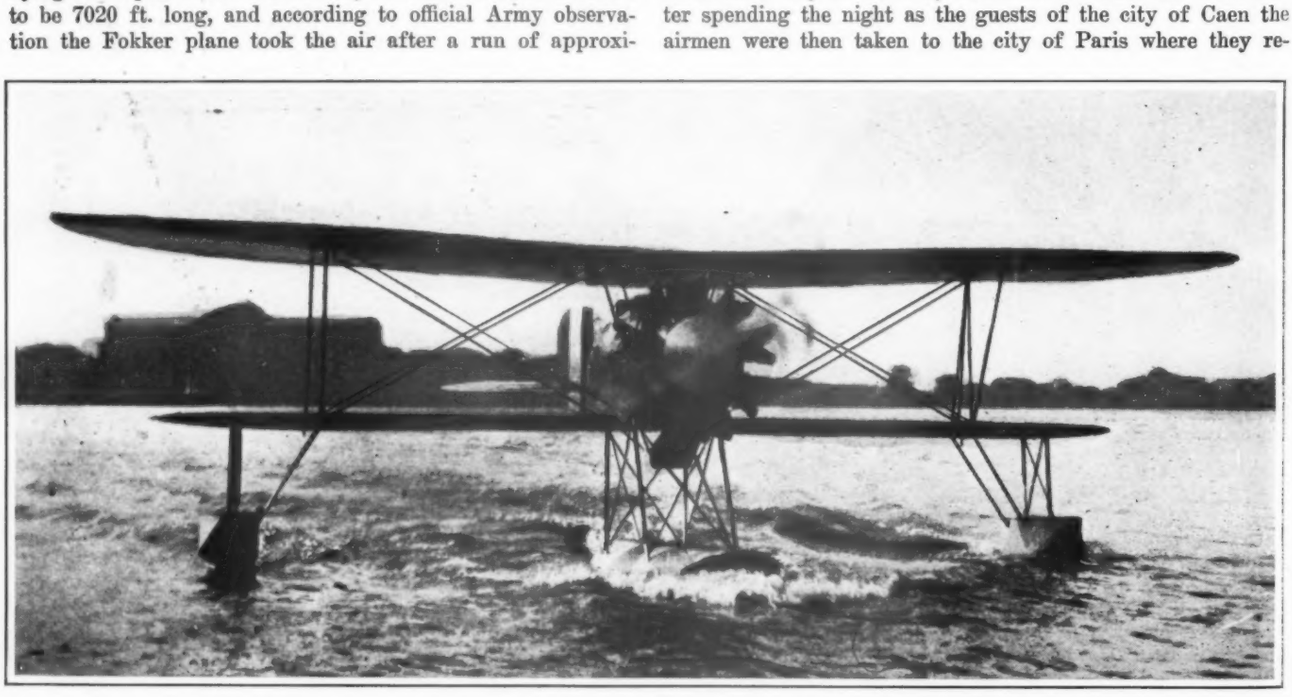
The next aerial event of importance was begun shortly after 9 o'clock on Tuesday morning, June 28, when Lieuts. Lester J. Maitland and Albert Hegenberger soared into the air with a three engined (Wright Whirlwind) Fokker Army transport from the runway of the Oakland Municipal Airport in California and headed west toward the Hawaiian Islands some 2400 mi. away. Exactly 25 hr., 15 min. later the huge plane was glided down to a perfect landing on Wheeler Field, Island of Oahu, Hawaii. Thus for the first time in history the American mainland and the Hawaiian Islands were successfully connected by air, and added to that was the establishment of a new world's record for non-stop distance flying over open water. The runway at Oakland Field is stated to be 7020 ft. long, and according to official Army observation the Fokker plane took the air after a run of approximately 6,000 ft. Lieutenant Maitland headed the plane out over the Golden Gate as soon as he had left the ground, and after the mainland had passed out of view no land was sighted for 23 hr. When they did sight land it proved to be the Island of Kauai northwest of Oahu Island of the Hawaiian group on which they landed.

While the Fokker Army transport plane was winging its way across the Pacific stretch, another three engined (Wright Whirlwind) Fokker monoplane, "The America" commanded by Comdr. Richard E. Byrd, took off from Roosevelt Field



Travel Air plane "Woolaroc" piloted by Arthur C. Goebel from California to Hawaii.

bound non-stop to Le Bourget Air Field. The date and time of the exact take off was 5:24 A.M., June 29, and at 2:30 A.M., (French time) July 1, the plane was landed in the sea some 200 yd. from shore near Ver-sur-Mer, France. Accompanying Commander Byrd were Bert Acosta, pilot; Lieut. Geo. O. Noville, flight engineer and Bernt Balchen, relief man. Together the four airmen had set out to cross the Atlantic and land at Le Bourget, but after being in the air for over 40 hr., 19 of which were spent in fog out of sight of land or water, and the last 5 being spent groping blindly through pitch darkness over French soil in the search of a suitable place to land, they voluntarily ended their trans-Atlantic flight in the waters off the French coast, and then made their way to shore by means of a rubber life raft. After spending the night as the guests of the city of Caen the airmen were then taken to the city of Paris where they re-



Lieut. C. C. Champion, Jr., U.S.N., coming in with the Navy "Apache" ("Wasp" equipped) after establishing the World's seaplane altitude record of 37,995 ft.

ceived what little medical attention as was necessary after their aerial ordeal.

The take off from Roosevelt Field which was made by Acosta was perfect and counting the weights of the four men the total load of the plane was more than 7 tons or close

Lieuts. Albert Hegenberger (left) and Lester J. Maitland who flew non-stop from California to Hawaii.

to 15,000 lb., most of which was accounted for by the 1305 gal. of gasoline in the tanks. The plane took 48 sec. to run the 3268 ft. before it got into the air. In a full load test it had made a take off in 27 sec., but this time Acosta had allowed the plane to carry itself into the air. The landing in the water was made by Bernt Balchen, who had some time before relieved Acosta at the controls. Commander Byrd was the last to leave the plane and he took with him the mail, and part of the Betsy Ross flag which he was to present to President Doumergue of France, and as many of his charts and technical notes as he could rescue.

On July 4, Lieut. C. C. Champion, Jr., U.S.N., established a new world's altitude record for seaplanes, when he reached a height of 37,995 ft., in a Navy "Apache" shipboard fighter equipped with a Pratt & Whitney "Wasp" engine. A Root's type supercharger developed by the N.A.C.A., at its experimental station Langley Field, Va., was used in conjunction with the Wasp engine. In the month of December announcement was made by the Federation Aeronautique Internationale that the world's altitude record for seaplanes had been awarded to Lieutenant Champion. This record of 38,474 ft., was made by Lieutenant Champion on July 25, 1925, and was designated as the official altitude record when the F.A.I. removed the name of Callizo, the French pilot, from its record.

After once having been forced to abandon an attempt to fly from California to Hawaii, Ernest L. Smith and Emory B. Bronte took off from Oakland Airport, Calif., at 10:40 A.M., (Pacific time) Thursday, July 13, in a single Wright Whirlwind engined Travel Air monoplane and headed out over the Pacific Ocean en route for Wheeler Field, Hawaii, where Lieuts. Maitland and Hegenberger had landed. However, after flying for 25 hr., 36 min., the fliers were forced to land in the trees on the Island of Molakai, 93 mi. southeast of Wheeler Field and 2,348 mi. from their starting point. This flight marked the second successful crossing of the Pacific stretch and had it not been for the complete exhaustion of the fuel supply which necessitated the forced landing Smith and Bronte would undoubtedly have carried on to Wheeler Field to make an exact duplication of the Army flight.

The take off from Oakland was delayed for three hours due to fog and a false start when the plane hit a rut. Fog was also encountered for almost the entire trip, and the first land sighted after leaving the American mainland was the peak of Moula Loa on the Island of Hawaii. Altering their course the fliers headed for Oahu and Wheeler Field but the fuel gave out at Molakai. The landing was made in the trees as the fliers considered it less dangerous than to try to land in the swamps. The plane was damaged beyond all hope of repair, and only the engine and instruments could be salvaged.

On July 20, after having returned to his native country where he received the high tributes of the individuals, organizations and government bodies alike, Col. Charles A. Lindbergh left New York for an aerial tour in the Spirit of St. Louis of the 48 states of the Union. The tour which was conducted under the auspices of the Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., was completed with Colonel Lindbergh's return to New York City on Oct. 23. On the tour he was accompanied by a Fairchild cabin monoplane belonging to the Department of Commerce and piloted by Lieut. Philip Love. The total distance of the tour was 20,350 mi. and the total number of hours spent in the air was 260. During this time 23 state capitals were visited, a total number of

Emory B. Bronte (left) and Ernest L. Smith, first civilian airmen to make the California to Hawaii flight.

13 touch stops were made, a total number of 69 long stops were made and on only one occasion was the New York-Paris pilot late in arriving at a designated point. It was estimated that over 30,000,000 people saw the plane and during the tour both planes performed perfectly; there were no overhauls, no forced landings and no delays of any kind from mechanical difficulties. The Spirit of St. Louis was powered

(Cont. on page 50)

And What *of* 1928 ?

Continued Development of All Phases of Aviation, Particularly Airports and Engines Will Make for Year of Prosperity

FROM WHATEVER angle we look at it 1927 has been a banner year for aviation in America. The air mail under private operation has shown a most healthy growth and has proved that, under proper conditions and management, air transportation can be made a profitable venture. Aerial service operators and dealers in aircraft have done a land office business. Manufacturers of commercial planes were so far wrong in their last winter's estimates of production that they have had a hectic and hard working year catching up to the demand, but somehow no one seems to feel sorry for them. Last, but still not least, the manufacturers of military aircraft have received large orders and what is more important the orders have been given out in a fashion which has tended to stabilize the industry.

Postmaster Powers (right) of San Francisco swearing in W. E. Boeing, president of Boeing Air Transport as official Air Mail carrier at San Francisco, July 1, 1927.

But what of 1928? Will there be another Lindbergh boom or will aviation wing its way to the front through a less meteoric progression? These questions may be answerable by the dead but those of us who are alive will have to wait for the passing of another 365 days. There are however certain factors in the situation which developed during 1927 and which are bound to affect the situation during 1928.

Though not spectacular, one of the most important factors is the development of airports which has been going on at a very rapid rate throughout the year. Numberless towns which in 1926 were without landing fields now have airports. Not only will this encourage local flying and create an increase in the demand for planes and pilots, but it will make cross country flying much easier and convenient. Every airport developed during 1927 will create a demand for new planes and the planes already in service will have a greater usefulness as there are more places that can be landed at.

The knowledge that there are landing fields along the route at which service can be obtained and at which emergency landings can be made will be a great encouragement to those who are contemplating cross country flights. Landing fields will have the same effect on air traffic as good roads and garages have had on the popularity of automobiling. The landing fields built in 1927 will have their effect on the use and demand for planes in 1928.

Although in the long run flying would have established itself through safety and usefulness there is little doubt but that the spectacular flights of 1927 have greatly lessened the inertia which has to be overcome in the establishment of any new industry or method of transportation. The enthusiasm of 1927 can not remain at as high a pitch during 1928, but there is every reason to believe an intense interest in aeronautics will continue in 1928. The public at large has gradually acquired some knowledge of flying and the flying fraternity will perhaps have to spend less time in answering absolutely elemental questions. Flying has an actual bearing and meaning to many more people on Jan. 1, 1928, than it did on Jan. 1, 1927, and there is bound to be a wider application of its advantages.

Two movements have grown in popularity during 1927 which should increase the demand for aircraft. The first is the formation of flying clubs which own planes and in which the members not only have the advantages of pleasant companions but also get their flying at considerably lower rates. These clubs differ fundamentally from the flying clubs and associations of previous years in that they are primarily designed to give members an opportunity to fly more easily and under pleasanter circumstances. In England such clubs have greatly stimulated private flying and it is hoped that the club idea will have the same effect here in 1928.

The second movement is the great extension of the building of model airplanes and gliders which has been carried on by the various boys clubs throughout the United States. The effect of these may not be so manifested in 1928 but they certainly will have an influence on future years when the boys grow up.

Front quarter view of the Ireland "Neptune" showing the seating arrangement of five persons.

The unexpectedly large demand for planes in 1927 caused all established manufacturers to expand their facilities, and it brought out a whole crop of new entrants in the field. The newer firms have had a hard struggle for though they could

sell their planes as fast as they could produce them their lack of experience prevented them from living up to the schedules which they have laid out. Also many of the newer planes had not been tested thoroughly enough and often their design was at fault and in the rush to produce planes they overlooked many details which only actual use could bring to light. Though the older manufacturers suffered from these same troubles they were affected to a lesser degree and as far as one can see the experienced manufacturers were in

Action photo of a Waco 10 powered with a Fairchild Caminez engine.

a stronger relative position at the end of 1927 than at the beginning. This is especially true among the manufacturers of planes for OX-5 engines which had had several years of experience in manufacturing.

The year of 1927 taught existing manufacturers how to produce commercial planes in considerable quantities and it also brought the attention of financial interests to the fact that there was a considerable demand for planes. Existing concerns in 1928 will find it easier to raise money for expansion but it would not be surprising if 1928 brought several automobile manufacturers or other large concerns into the aviation field. It is almost certain too that several concerns which have been manufacturing military planes exclusively will turn their attention to the construction of commercial planes.

The most serious problem facing the manufacturers of commercial airplanes is the question of engines. The demand during 1927 used up the stock of low powered war surplus engines much more quickly than had been expected and there is little doubt that before the end of next year the supply will be exhausted. The change from the cheap war surplus engines to modern engines will require a complete readjustment in the low power class, and it will require good guessing and quick action to meet the situation. It is probable that the engine situation in 1928 will be detrimental to the manufacturers of planes but by 1929 the situation should be adjusted and very much bettered. As the new engines are brought out we shall see new planes designed around them. There will probably be three and four seater cabin planes but the type which is most likely to come to the front is the two seater, advance models of which have appeared in 1927. When the stock of war surplus engines is used up planes will sell pretty much on the basis of their horsepower and the all-purpose plane will give way to one which fills a specific need.

There are at least a dozen groups which are planning to bring out commercial engines during 1928 and several of these engines have received considerable testing. If there is one thing that is certain about 1928 it is that there will be great developments in the manufacture of commercial engines.

There is another development which has been initiated in 1927 but which will almost certainly take a prominent place in 1928 and that is the manufacture of commercial flying boats. This field has lain practically dormant since the war and until 1927 practically all overwater flying in this country was done in war surplus boats. In 1926 a few commercial seaplanes were built and in 1927 the number increased to about forty or fifty. This demand for seaplanes indicates that there is also a demand for flying boats and amphibians. Two concerns have turned out amphibian flying boats during 1927 and there is little doubt but that 1928 will see several new concerns in the field and an appreciable production.

The turning over of the transcontinental air mail to private operators in 1927 and the extension of the feeder line system brought about an enormous development, which should continue on in 1928. The operating experience gathered in 1927 will help the companies to do better financially in 1928. Besides, the further extension of the air mail system will bring a larger volume of business. The public has already shown its willingness to pay enough extra postage to make the air mail profitable and there is every reason to believe that the air mail will continue to grow and prosper in 1928. It is almost certain too, that the year will see appropriations by Congress and the extension of the air mail to foreign countries, notably Central and South America. This would be the first step of a development which might prove even more important than our internal air mail. Several passenger lines are being projected for 1928 and this development seems to be especially active on the West Coast. Hitherto passenger transportation in the United States has not proved a success but it must be admitted that with a few exceptions the attempts have not been carried on under ideal circumstances and it may be that 1928 will develop a passenger line which pays its way and which can continue without subsidy.

From the technical standpoint the operation of air lines in 1927 has been a period of accumulating experience rather

A Keystone "Pathfinder" (Whirlwind) in the service of the West Indian Aerial Express.

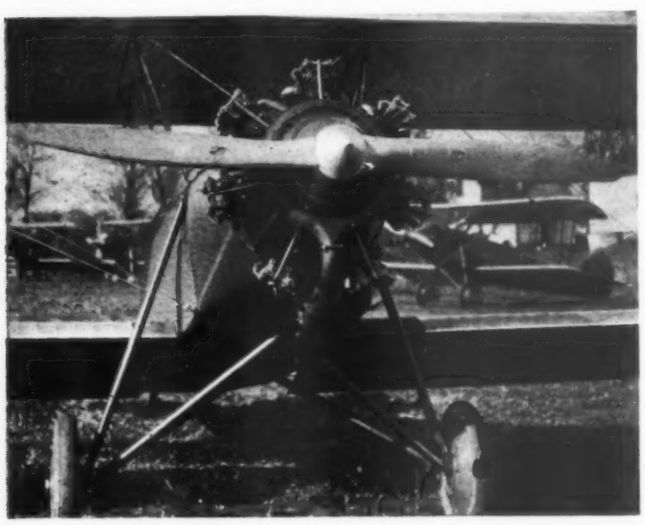
than one in which startling progress was made. There has been an improvement in the aerodynamic efficiency of the planes but the wider use of modern radial engines has brought about an even greater improvement. During 1927 several operating companies adopted closed cabin mail planes with the idea of carrying passengers but on the whole these experiments have not met with unqualified success, and there seems to be a tendency to return to the open cockpit plane, especially for night flying. The most discouraging feature of 1927 was the fact that there was little improvement in the

regularity of operation. Although the public has shown that it would patronize the air mail even with its present irregularity it is disappointing not to find more progress. On the other hand there has been a great amount of research going on in lighting, weather forecasting, directional wireless and in instruments, especially altimeters. It is hoped that this research will bear fruit and that 1928 will see the inauguration of blind flying as part of the regular schedule of operation.

No Lighter-Than-Air Developments

As far as this country is concerned next year will not bring any definite developments into the field of large lighter-than-air craft but several large European dirigibles will be launched and work on our own large ship should be well advanced and the small metal dirigible may be completed by the end of the year.

From the technical viewpoint 1927 does not seem to have brought out much which will have a vital influence on the development of airplane design in 1928. The one exception is the development of the Handley Page slot, which, if reports be true, has now been perfected to the point where in practice it will do those things which it can do in theory and in the wind tunnel. If this is so, 1928 will see a very marked improvement in the safety and efficiency of aircraft. 1928 will undoubtedly bring out several serious competitors for the Guggenheim Safety Competition, and even if only partial success is achieved, the year will mark considerable technical progress in the study of a very difficult problem.



A Waco 10 powered with a Seimens-Halske seven cylinder engine.

As has been stated before 1928 may be jarred out of its normal development by some unusual achievement or new invention but even without such an unexpected intervention as took place in 1927 we may expect a prosperous and progressive year during 1928. New airports will create a demand for planes and the volume of business should bring prosperity to the manufacturers. The demand for new commercial engines will create what amounts to a new and large branch of the aircraft industry. The new engines will enable several new and improved types of planes to be built and will put a premium on engineering. There is every reason to believe that the air mail will continue to expand and that it will be extended to foreign countries. As far as technical developments go it is impossible to make any definite predictions. On the whole it is safe to assume that the aeronautical trade can look forward to a progressive and prosperous year during 1928.

The Outlook for 1928

A statement by Frank H. Russell, vice-president, Curtiss Aeroplane & Motor Co.

"WE STAND at the threshold of 1928, the twenty-fifth anniversary of the birth of aviation.

"Looking back, we see the year 1926, in all branches of aeronautical activity, as one of preparation for a great future,—how far off in its development no one could then anticipate. Military aviation was placed on a sound basis with the passage by Congress of the Five Year Procurement Program, and commercial aviation was recognized by legislation establishing a Bureau of Aeronautics in the Department of Commerce.

"Thus 1927 dawned with the Governmental support which was essential to healthy development.

"The year has proved to all the great value of the Commerce Bureau under the wise guidance of Secretary MacCracken, not as a restrictive or limiting agency, but one operating primarily for the development of commercial activities. The creation of new types of air-cooled and water-cooled engines made possible the development of new military aircraft in both Army and Navy, having performances unequaled in the world, and our factories have been busy meeting in a commendable manner the demands of the Services for aircraft.

"Commercial flying received its phenomenal impetus through the trans-oceanic flights of Charles A. Lindbergh and his successors. The Colonel has become the inspiring genius of commercial flying. The factories have not been able to meet the demand for commercial planes.

"So we find that in the beginning of 1928, for the first time in the history of aeronautics, a demand for aircraft exceeding the supply.

"The manufacture of airplanes and engines is extending to many new organizations, well founded to assist in production. Their success individually will depend upon their engineering experience and their sound business management, and collectively upon their realization that they have entered an industry which the public will respect and support in direct proportion to the quality of their products and the collective publicity which is necessary to promote popular confidence.

"It is gratifying to note the increasing strength and far-sighted management of the Aeronautical Chamber of Commerce which has become very properly the mouthpiece of the industry.

"We begin 1928 with well-founded confidence that the industry will meet the public demand that America may continue to be 'First in the Air'."

Industrial Survey Planned to Increase Air Transportation

THE POSTAL Service Committee of the Chamber of Commerce, of Oklahoma City, Okla. is planning a survey of Oklahoma City industry to find ways in which shippers may save time and effort in the use of air transportation, O. N. Dale, chairman, has announced. Freight deliveries, trade territories, comparative transportation rates, and the possibility of increasing the mail order business of department stores are a few of the points to be considered.

Breese Flying Service Formed To Operate From Mills Field

WITH VANCE Breese, former air mail pilot, now a San Francisco aircraft manufacturer, at its head, the Breese Flying Service has been formed to operate from Mills Field, San Francisco's municipal airport.

Mr. Breese has associated with him Paul Shepherd, Joseph Salzman and several others, mostly San Francisco business men. A $75,000 corporation is being formed to manage the service.

The service has obtained the agency for the Waco plane for San Mateo and Santa Clara counties, California. Mills Field is located in the former. One Waco ten has already been delivered, a second is expected soon and three others have been ordered.

The activities to be carried on at first will include only a flying school and passenger-carrying service at the field, with a taxi service to be added later. Beside the Wacos, the new firm intends to operate two or more Breese Monoplanes. A satisfactory list of students has been enrolled and other would-be pilots are listing themselves daily.

For the present, Mr. Breese himself and Mr. Salzman, who is an old-time northwest pilot, will handle the instruction work. A pilot and a mechanic are maintained throughout the day at the field and with arrival of the new monoplanes from the Breese factory, 24 hour service will be installed. This is made feasible by the facts that the field is exceptionally well lighted and the monoplanes are equipped for night flying. Two pilots are kept in reserve, day and night.

The service is said to be the first in the west where air transportation is available continuously, day and night. Headquarters of the service will be at the Breese factory, 270 Seventh Street, San Francisco, with active headquarters at Mills Field.

Maddux Air Lines, Inc., to Operate Ford Plane on L.A.-S.F. Route

FORMAL ANNOUNCEMENT of a new passenger air line between Los Angeles and the San Francisco bay region, was made recently by Jack Maddux, president of Maddux Air Lines, Inc., Los Angeles, Calif. Ford all-metal tri-engined planes are to be used. They have a capacity of 12 persons.

The announcement followed completion of a successful test trip in one of the new planes over the route between Los Angeles and San Francisco and Oakland, twelve passengers being conveyed over the 430 mi. in 3 hr. 20 min.

Mr. Maddux delayed announcement of the point at which the new line will have its terminus.

"We will probably have stops at both Oakland and San Francisco," he said.

As Oakland's field is actually nearer the center of business in San Francisco than San Francisco's own airport, if the journey across San Francisco Bay be made by boat direct from Oakland Municipal Airport, Oakland aviation enthusiasts are hopeful Mr. Maddux will select their field as the terminus for his line.

The Maddux line is already operating two planes on daily runs between Los Angeles and San Diego, with splendid patronage. He anticipated equally heavy traffic on the run between the southern city and the bay region. Ultimately, he anticipates operating a line from San Francisco Bay through to El Paso, Tex., by way of Los Angeles and San Diego.

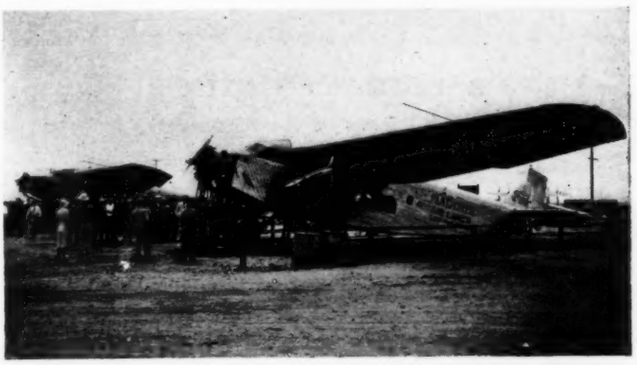
Long Beach has been selected as headquarters for the operation. This choice was made largely because of the good lighting at the Long Beach Field, facilitating night landings. The line's shops are also to be established in Long Beach shortly.

Of his test flight north and return, Mr. Maddux said:

"The splendid speed record made by our plane—an average of better than 100 m.p.h. for the entire distance with a complete list of passengers—demonstrates that a regular four hour daily service can be maintained with ease. Our inspection trip to San Francisco and Oakland proved, too, that the facilities are very superior there.

"Both these northern cities have splendidly equipped fields. Their provision for weather reports and other essentials to the commercial aviation corporation are unquestionably the best in the west. The prospects for capacity passenger loads between the north and southern California appear to be excellent.

"Hence, very shortly, as soon as another Ford plane arrives, our planes will be flying regularly from San Francsco Bay to San Diego via Los Angeles and soon thereafter all the way through to El Paso. We shall have at least half a dozen 12-passenger, all metal planes in operation within, I believe, a very short time."



Two Ford-Stout planes used by Maddux Air Lines at Rogers Airport, Los Angeles, Calif.

Philadelphia Appointed to Draft Code Covering Airports

THREE PHILADELPHIANS, Maj. J. Sydney Owens, commander of the Twenty-eighth Division of the Air Service, Pennsylvania National Guard; Hollinshead N. Taylor, chairman of the Aviation Committee, Philadelphia Chamber of Commerce, and Maj. Charles J. Biddle, former commander of the National Guard flying unit, have been appointed by the State Aeronautics Commission to draft a code of rules to regulate airports in Pennsylvania.

Lieut. P. R. Love Now With the Fairchild Airplane Mfg. Corp.

LIEUT. P. R. Love, formerly with the Department of Commerce, has joined the Fairchild Airplane Manufacturing Corp. Lieutenant Love will be in the sales organization of the Fairchild Company and will use a Fairchild cabin monoplane for his sales work. It will be remembered that Lieutenant Love accompanied Colonel Lindbergh on his recent Good Will Tour of the U. S. in a Fairchild monoplane belonging to the Department of Commerce.

Radio Direction Finding

An Important Item in Aircraft Navigation that Warrants Careful Consideration of Airline Operators

By LAWRENCE A. HYLAND

Radio Engineer

Article Five

RADIO DIRECTION finding is of such vital import to aircraft as to deserve the most careful consideration from the operators of air lines. The aims of the art are to (1) direct the aircraft along airways which are obscured by darkness, fog or inclement weather and (2) enable the aircraft to determine accurately the limits of the airport and effect a landing regardless of the condition of visibility.

The directing of aircraft by radio has progressed to the point where it is a practical and valuable navigational aid. Several methods have been successfully developed to accomplish the purpose each of which comes under one of three general classifications.

(1) The direction finder or radio compass.
(2) The beacon.
(3) The beam.

It should be stated at the outset that, as may be expected, the problems of ground direction finding installations are all present in exaggerated form in aircraft. For this reason certain of the devices which show superlative performance for ship and shore work are of doubtful value in an airplane.

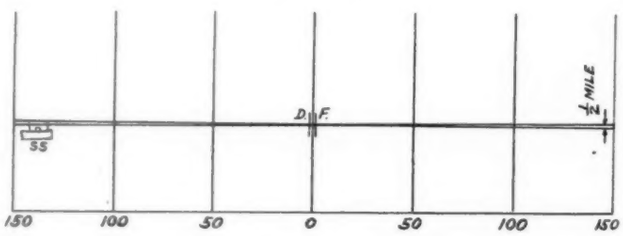
European Custom Has Serious Faults

The common European practice is to have the bearing taken on an aircraft by a ground station after which the information is transmitted to the aircraft. This custom has serious faults. Where the ground station takes and transmits the bearing only one aircraft can be served at a time. A sensible interval must elapse between the request for bearing and its final receipt by the pilot. At short distances there are very rapid shifts in direction due to the speed of the plane and it is frequently the case that the bearing is worthless by the time it has been received on board the plane. Yet an airplane requires its most accurate bearings when within twenty-five miles of its destination when the shift is most rapid. Skilled operators on the ground and in the air make the European radio bearing procedure of first utility provided the planes arrive at the airport at intervals of not less than one half hour. When several craft arrive within a short period, however, confusion is bound to ensue. No amount of skill will permit operators to determine satisfactorily the direction of one of several aircraft, each of which is clamoring for service and any one of which may overrun the station if compelled to wait for his turn. This discussion will, therefore, be confined largely to methods which indicate directly to the pilot what the bearing is, the ground station being used merely as a known reference point emitting radio waves instead of light waves.

The direction finder or radio compass is a receiving device which makes use of the properties of coil antennas to determine the direction from which radio signals are being received.

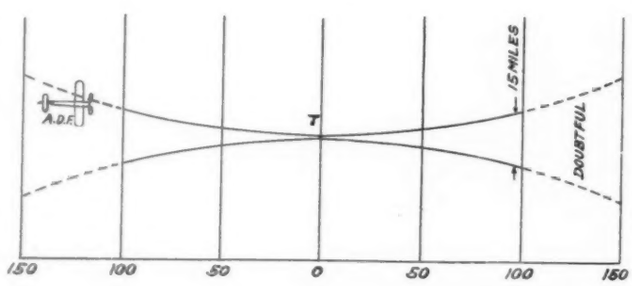
Standard ship and shore direction finders of the United States make use of a single coil composed of a few turns of wire wound on a large framework. The plane of the winding is vertical. With this arrangement it is possible to get bearings with an average error of less than a degree. This excellent directional characteristic results from the fact that a coil antenna when rotated about its vertical axis picks up very loud signals at all points except where the plane of the coil coincides with a line drawn between the transmitting station and the coil. In this position (there are two points 180 deg. apart where the coincidence exists) the signal disappears completely. In Fig. 1 (a) is shown a typical plot of radio compass performance at a ground station. The narrow angles 180 deg. apart are a measure of the accuracy ordinarily achieved. Such fine operation requires quiet sur-

Fig. 1 (a)



Miles (Direction Finder from Transmitting Station)
D.F. = Direction Finder S.S. = Steamship
Average Error of Ground Direction Finder

Fig. 1 (b)



Miles (Aircraft Direction Finder from Transmitting Station)
T. = Transmitter A.D.F. = Aircraft Direction Finder
Average Error of Aircraft Direction Finder

Chart showing typical performance of aircraft radio compass and ground station radio compass.

roundings in order that the exact point of zero signal intensity may be located.

In aircraft, however, receiving conditions are far from the ideal. Motor exhaust, ignition disturbance and vibration all combine to produce a high noise level. Under this handicap it is, of course, impossible to find the point at which the signals are zero. Instead the radio operator notes the point of rotation where the signal disappears below the noise level and continues to move the coil until the signal is again heard,

Fig. 2 (a)

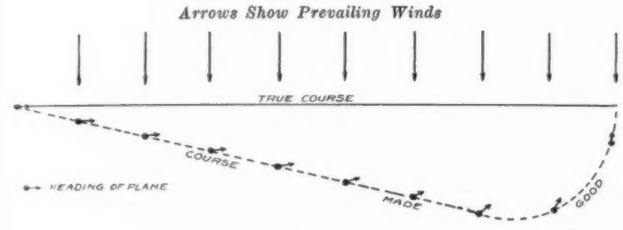
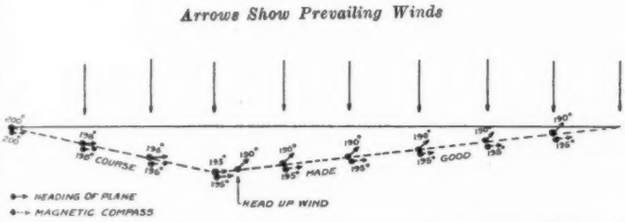


Fig. 2 (b)



Effect of flying wholly by radio compass in a cross wind and method by which straight course can be maintained.

noting this point also. The bearing, then, is the midpoint between the disappearance and reappearance of the signal. If the limits of the "quiet zone" were clearly defined, it might be possible to get fairly accurate bearings at distances in excess of one hundred miles. But, unfortunately, the signal and noise merge so very gradually that it is difficult to judge just when one begins to be the dominant sound. For this reason the radio compass is subject to large errors at the longer distances. At short distances where accuracy is essential the radio compass is on par with other aircraft direction finding systems. In Fig. 1 (b) is shown the bearing accuracy which may be expected from a radio compass on an aircraft.

Rotating Coil Compass Not Suitable

The rotating coil radio compass such as is used for ship and shore station direction finding is not suited for aircraft. To obtain a signal strength which will allow bearings to be taken more than a few miles from a transmitting station the coil dimensions must be so large as to be impracticable for mounting and turning within an aircraft fuselage. In place of the rotating coil a large fixed coil is installed in or around the wings. The turning of the coil is accomplished by swinging the entire aircraft through the necessary angles.

At best the location of direction by turning the plane is a slow and clumsy process. To avoid it another type of direction finder places two large coils at right angles to one another. A small goniometer or electrical orienting device forms the rotating element. Installation difficulties and high cost combined with the inherent handicaps of any kind of aircraft radio compass prevent this scheme from being applicable in Air Commerce.

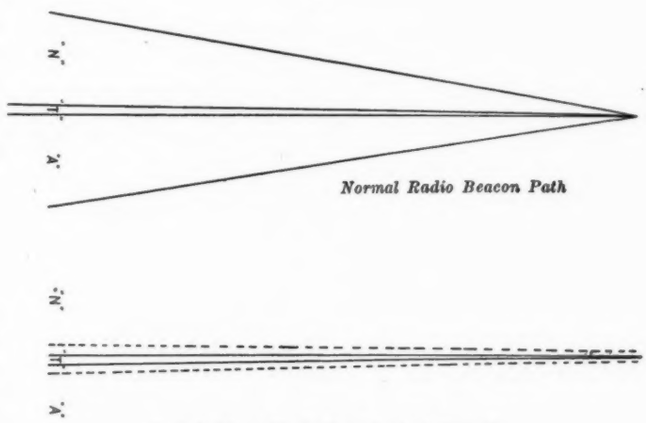
The increasing use of metal as a structural and covering material for commercial aircraft imposes a further limitation on the use of the radio compass. All metal planes such as the Ford and Hamilton form an effective shield against radio waves. In aircraft of this type the radio compass will probably prove to be useless.

The range and hence the value of the radio compass may be increased by improving the sensitivity of the receiver. There are many factors involved in this expedient. Receiver control, ignition interference, noise level and manufacturing costs are major items which must be considered in any attempt to increase the sensitivity of an aircraft receiver. In exceptional cases it might be advisable to have a special receiver, but on established airways with other means for direction finding available it would not be practicable to resort to this means of improving radio compass performance.

Radio Compass Valuable on Isolated Routes

There may be situations in which no type of direction finder or other than the radio compass may be used. Isolated air routes where traffic is not dense enough to warrant a beacon, or regular air routes on which the beacon has not yet been installed are examples of cases in which the radio compass may prove of great worth. Where the radio compass is decided upon as the means for direction finding, pilots should be instructed to use it in conjunction with the magnetic compass. If reliance be placed on the radio compass alone there may be serious drift when the plane is flying a course across the wind. In Fig. 2 (a) is shown the effect of drift when flying head on to a transmitting station objective. During a long flight and with a stiff cross wind the deviation from the course may be so great as to be dangerous. The remedy is to note the magnetic compass bearing after each radio bearing. If there is a constant shift of the magnetic compass in one direction a cross wind is indicated. Then the plane should be headed "up wind" a few degrees as in Fig. 2 (b). This will mean that the "zero signal" heading by which direction is found has been changed to a loud signal heading. Occasionally however, the plane should be swung through the necessary angle to provide a radio check of the estimated true course i.e. if the plane has been headed into the wind at the correct angle to maintain the true course, the magnetic compass reading taken on all subsequent radio bearings will be the same as on all previous radio bearings.

Fig. 3



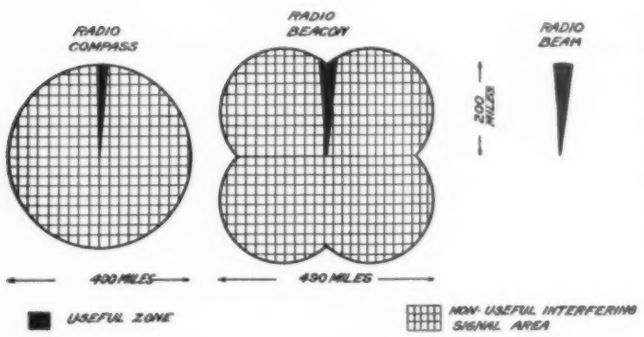
The useful radio beacon zones. Note the narrow path of the true course. Even the directional effect of the antenna does not impair the width of the central path to any appreciable extent.

The most practical of the demonstrated methods by which a commercial aircraft may be led to its destination is through

the medium of radio beacon signals. In its present form the beacon is the result of extensive investigation and development by the Army and the Bureau of Standards. The application of the beacon to commercial airways is now being carried on by engineers at the Bureau of Standards.

The radio beacon is a transmitting device located on the ground which utilizes the directional properties of two coil antennas. In its simplest form a signal of equal intensity is transmitted from each coil and four "equisignal zones" are formed by the combined emission of the coil antennas. These zones are the markers of lines of flight. In practice

Fig. 4



A comparison of the useful and interfering signals from the three general types of direction finders.

only one is used for it is seldom indeed that cities are located on lines ninety degrees apart from an important common center. The elementary radio beacon while capable of giving good results with an expert operator in a plane was not suitable for commercial use. The difficulty was that a pilot who, through erratic flying or undiscovered drift, deviated off the course had no means of knowing whether he should turn to the right or to the left in order to regain his course. This problem was solved by the transmission of an interlocking signal from the coil antennas. This provided an identifying signal for each of the three conditions in which a pilot might find himself. For instance a pilot on his course hears the Morse signal "T" continually repeated. If he happens to be to the right of his proper line of flight the Morse signal "A" is received, while if to the left a Morse "N" is heard. The central zone which marks the line of flight is from two to eight degrees wide depending on the care used in the installation of the beacon. With the identifying signals it becomes very easy for a pilot to maintain his course regardless of cross wind.

Further Investigation Being Made

Further simplification of the use of the radio beacon is now being investigated. In its ultimate form a visual indicator will probably supplant the audible signals now employed. An arrangement whereby different colored lamps will flash the information that the aircraft is on, or to the right, or to the left of the course is now being developed.

The advantages of the radio beacon are almost self evident. First of all no special equipment is required on the airplane beyond that needed for receiving weather reports. With all the directional apparatus on the ground it is possible to make the range of the directional equipment almost anything that is desired without adding a pound to the weight carried by the plane. Excellent directional signals for distances of two or three hundred miles may be obtained in day time from the combination of the ordinary aircraft receiver and a powerful beacon. The ability to indicate the direction of the true course and to give that information when only a degree or two off the correct line of flight is a matter of prime importance which can be accomplished in practical form by the radio beacon alone. See Fig. 3.

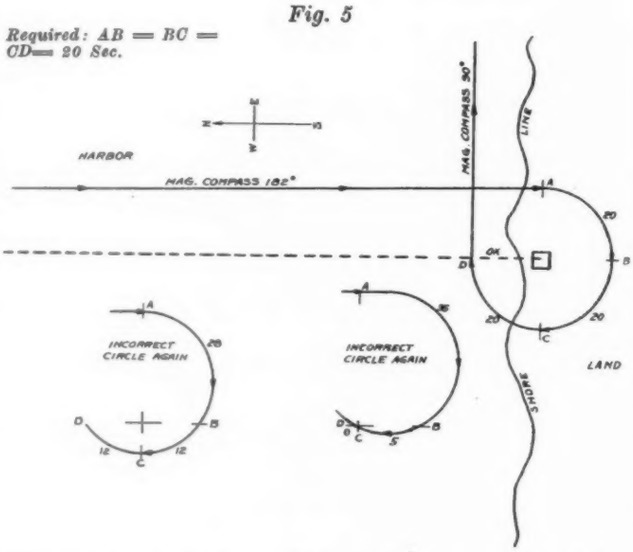
The development of beam transmitters has not progressed to the point where aircraft may be successfully directed by such devices. It is not improbable, however, that the beam transmitter will supplant the beacon at some future date. A beam transmitter confines all of its emission to a very narrow zone. No signal is heard on either side of the beam nor is there any possibility of a ninety degree or one hundred and eighty degree error. An inspection of Fig. 4 will disclose that both the radio compass and radio beacon transmit interfering signals over a wide area though the useful sector of the directive signals is very small. The installation of too many beacons may cause an overlapping of the signals from adjacent stations with consequent interference and possible confusion to pilots. This condition will not take place for some years, however. Radio beam transmitters usually operate at short waves. The English Marconi Company has installed some beam stations on the English coast. They are being operated with considerable success as directors of shipping at harbor entrances.

No Known Remedy for "Night Effect"

Assuming that the ground or aircraft direction finding apparatus of whatever type has been properly installed and is in perfect working order there are possibilities for error which should be known.

First in order is the phenomenon known as "night effect" which manifests itself on broadcast receivers as "fading" but which causes incorrect bearings to be indicated by direction finding apparatus. There is no known remedy for this condition. It is fortunate that the phenomenon is only present at distances in excess of one hundred miles. When flying at a distance greater than one hundred miles from a

Fig. 5



Illustrating a method by which seaplanes may be landed in a fog.

beacon station the pilot may notice that his zones change rapidly back and forth. In the space of five minutes he may hear several cycles of the shift which at different periods indicate that he is on, off to the right or off to the left. As hinted by its name the condition occurs only at night. No

great faith should be placed in the directional apparatus when this shifting shows up. The pilot should fly by dead reckoning until within a hundred miles of the destination. From then on he may rely on the accuracy of the radio bearings.

A slight error is introduced into the radio beacon bearings because of the directional action of the antenna. This is present when the plane is flying at an angle to the true course, as in a cross wind. The error is a small one and becomes progressively less as the transmitting station objective is approached. The cause of this error may be eliminated to some extent by receiver design and by the use of a shorter antenna which hangs as nearly vertical as possible.

That branch of the art which has to do with the locating of landing fields and the effecting of a landing in dense fog has not reached the stage of development where a single method or apparatus may be used to solve the problem at all airports. In special cases the present direction finding equipment may be used in a manner which will accomplish this purpose, though at many airports there is no known method or device which can land a plane in a fog with even a reasonable degree of safety.

Beacon Emergency Landings Possible

Where the landing field is large in extent and has no serious hazards nearby it is possible to make an emergency landing by using the beacon or the aircraft radio compass as the field localizer. Recently a pilot located the landing field at Bellefonte by means of the radio beacon and made a successful landing. His altimeter was good and he was lucky.

The situation for seaplanes and flying boats is somewhat different. They have, in many cases, a very considerable area in which to make a landing. By cooperating with a suitably located radio compass station on the ground a landing can usually be effected with little difficulty in very foggy weather. In Fig. 5 the seaplane flies a little off the bearing given by the compass station, and approaches the station from the side. When the bearings begin to change rapidly the seaplane transmitter is made to operate continuously, any receiving being done without the antenna (which is not needed when the station is close by.) The compass station takes a steady series of bearings on the plane and sends notification when the plane passes each quadrant. When the bearing 90 deg. is first received by the plane the pilot starts to make a 15 deg. turn. It has been ascertained previously what the radius of such a turn is, and the time consumed in making a quadrant at such a rate of turn. At the instant of commencing the turn the pilot notes the time or starts a stop watch conveniently mounted nearby. If the bearings of 180 deg. and 270 deg. are received with the correct interval the pilot prepares to straighten out immediately on receiving the signal for 0 deg. The landing is made with the plane in a power stall losing altitude as slowly as possible. Needless to say the altimeter should read about 500 ft. if the plane is to be kept within a reasonable distance of the compass station in landing. This scheme, proposed and tried by Lieutenant Rodd, U.S.N., of NC 4 fame, and Lieutenant Commander Dodd, U. S. Navy, is comparatively simple and reliable in application though the explanation may seem involved. It is but one of many methods by which existing directional devices may be used in the solution of special locating and landing problems.

Airplane direction finding by radio is not automatic. It is no substitute for sound judgment on the part of the pilot. When used with intelligence, radio direction finding is a valuable aid which relieves the pilot of much of the strain of navigating in adverse weather. To become proficient in the use of radio direction finders pilots should fly by radio bearings in good weather, checking position occasionally by familiar landmarks. In a short time flight by radio bearings will become instinctive, after which it will require no more effort to fly safely by the radio "railroad track in a fog" than it does to follow the transcontinental airway on a clear night.

The concluding article of this radio series by Mr. Hyland will appear in an early issue of AVIATION.

Four Pitcairn Mailwing Planes Delivered to Texas Air Transport

PITCAIRN AIRCRAFT, Inc., the sales organization of Pitcairn Aviation, Inc., with headquarters at Philadelphia, has announced the sales of four Pitcairn Mailwings (PA-5 with Wright Whirlwind engines) to Texas Air Transport, Inc., of Fort Worth.

Three of the planes were taken from the Pitcairn Aircraft factory at Bryn Athyn on Dec. 5 and the fourth was taken Dec. 10. Thomas Hardin, operations manager for Texas Air Transport, and pilots Brewster and Andrews piloted the planes to Texas. They will be used in the Galveston-Dallas air mail service, operated by Texas Air Transport, Inc.

J. H. Turner Named as President Of the New Swallow Airplane Co.

A REPORT received recently from Wichita, Kan., states that J. H. Turner, vice-president of Travel Air, Inc., has been named president of the Swallow Airplane Co. The new company was organized from the purchase partnership of five Wichita business men of which Mr. Turner was chairman. The report also states that J. W. Craig was elected vice-president; C. A. Noll, second vice-president; W. M. Moore, treasurer; and W. B. Harrison, secretary.

East of Suez

Korea's only woman air pilot, Keigen Boku, is shown here (left), with her feminine mechanician, at the Yoyogi Airport in Tokio, during the recent civic airplane meet, in which she participated. She flew from her home in Korea for the pageant, with her mechanician as passenger.

Air Mail Pilots of America Now The National Pilots Association

THE ORGANIZATION formerly known as the Air Mail Pilots of America formed some eight years ago by pilots employed by the Post Office Department was recently reformed under the title of National Pilots Association with headquarters in Cleveland, O. The officers of the new organization are E. M. Allison, Bellevue, Neb., president; R. L. Wagner, Omaha, Neb., vice-president and treasurer; and C. F. Egge, Cleveland, O., executive secretary. At present there are five district governors and they are: District No. 1, Pilot Panton L. de Arce; District No. 2, Pilot Huestis L. Wells; District No. 3, Pilot George I. Myers; District No. 4, Pilot Harold T. Lewis; and District No. 5, Pilot Harry W. Huking.

Ernest M. Allison, president of the National Pilots Association.

The constitution of the Association calls for a division of membership into three classes, A, B, and C. Regulations governing membership in the three classes are as follows:

Membership in class "A" shall be confined to pilots holding a Master or Transport license issued by the Department of Commerce, and (1) who are employed as pilots on a route operated on a regular schedule; (2) pilots employed by firms or individuals in aerial transportation, photography, advertising or other aerial business; (3) pilots employed by federal, state or municipal governments except those engaged in military activities, such as the Army, Navy or Marine Corps.

Class "B" membership shall consist of (1) pilots holding license issued by the Department of Commerce and who are not eligible for class "A"; (2) pilots formerly employed by the Post Office Department Air Mail Service and who hold membership in "Air Mail Pilots of America".

Class "C" shall be honorary members.

Any member who changes his occupation will not be deprived of any of the privileges and benefits of the Association. Each application for membership in Classes "A" or "B" must be approved by the Governor of the district in which the applicant resides, and by a majority of the Executive Committee, before favorable action will be taken. The constitution permits any member to nominate candidates for Honorary Memberships, but a majority vote of the Executive Committee is necessary for favorable action.

The purpose of the Association is stated as, "For the advancement of the Air Mail and commercial aviation and to provide closer relationship among pilots to enable them to perfect any movement that may benefit them as a class and aviation in general."

Each month a members' bulletin is published, giving general news from the various sections of the country, Association activities, and comment on subjects relative to aviation, etc.

Fairchild Companies Are Merged Under One Holding Corporation

SHERMAN M. Fairchild recently announced the consolidation of all the Fairchild Companies under one holding company, the Fairchild Aviation Corp. of Delaware, with a paid-in capitalization of $1,553,550. The subsidiary companies are the Fairchild Aerial Camera Co., Fairchild Aerial Surveys, Inc., Fairchild Flying Corp., Fairchild Aviation, Ltd. of Canada, Fairchild Caminez Engine Corp., Fairchild Airplane Manufacturing Corp., and the Compania Mexicana de Aviacion of Mexico.

Mr. Fairchild is president of the new company with Robert Law, Jr. as chairman of the board of directors. The other directors include Governor John H. Trumbull of Connecticut, George H. Townsend, president of the Boyce Motometer Co.; G. B. Grosvenor, vice president of the Fairchild Aviation Corp. and formerly vice president of the Otis Elevator Co.; George R. Hahn of Pittsburgh, William Dewey Loucks, an attorney; Maj. Talbot O. Freeman, formerly treasurer of the Colonial Air Transport; Ernest Robinson, John Paull and Harold Kondolf, who is secretary and treasurer of the Fairchild Aviation Corp.

Faircam Realty Corp. Organized

The same group has organized the Faircam Realty Corp. of New York, it was announced, with a paid-in capital of $400,000. The realty corporation will own the land and buildings used under a long-term lease by the aviation corporation and subsidiaries. The realty company now owns about 85 acres at Farmingdale, L. I., adjoining the Long Island Railroad. Part of this land is to be used for new factories and contracts have already been let for the first unit in a comprehensive building plan to the Austin Co. of Cleveland.

Three buildings covering 200,000 sq. ft. of floor space are to be erected and the first is to be ready for occupancy by the Fairchild Caminez Engine Co. by Feb. 15, according to the plans. In discussing his plans Mr. Fairchild said that the engine company would continue to manufacture the four-cylinder air-cooled 135 hp. cam type engine. Designs have been completed for an 80 hp. air-cooled cam type engine which will be in production soon and experiments are being conducted with a view to developing the present engine by adding multiple banks to 800 hp. 16 cylinder engine for use on large transport planes.

The manufacture of the Fairchild cabin monoplane will be continued by the airplane company. Design is now being completed on a six place amphibian to be powered with an air-cooled engine and to be placed in production in the spring. It is understood that the company is planning to add two more types to its production line. One will be a four place cabin monoplane powered with the Fairchild Caminez 135 hp. engine and the other will be a light low powered sport plane.

Titled Italian Ace to Study Aeronautics in This Country

IT WAS recently reported that Deputy Casagrande, Italian ace, is coming to this country to study the progress made in American aviation. Deputy Casagrande, whose full name is Count Eugenio Casagrande de Villaviera, has been entrusted with the mission by Signor Balbo, Italian under secretary for Aviation.

1927 Commercial Production

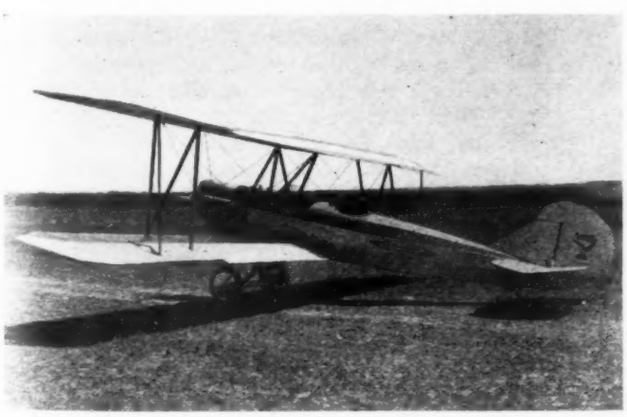
Total Estimated at 1653 With Advance Aircraft Co. Heading List of 103 Manufacturers With 454 Planes

By RICHARD M. MOCK

THERE HAS been a great deal of speculation as to the number of airplanes produced during the year of 1927. Estimates have been published varying from 1,600 to 8,000. Of course, it is impossible to have an analysis on 1927 production complete immediately after the close of the year. As in the past AVIATION has endeavored to complete an analysis of the aircraft production for the past year; a questionnaire submitted to the industry brought some very encouraging results. As usual a few of the manufacturers have been so busy producing planes that they have not had time to submit their figures, but in those few cases the production can be estimated fairly closely. This has been possible as this small group of manufacturers have produced few enough planes to give sufficient ground for a very reasonable estimate.

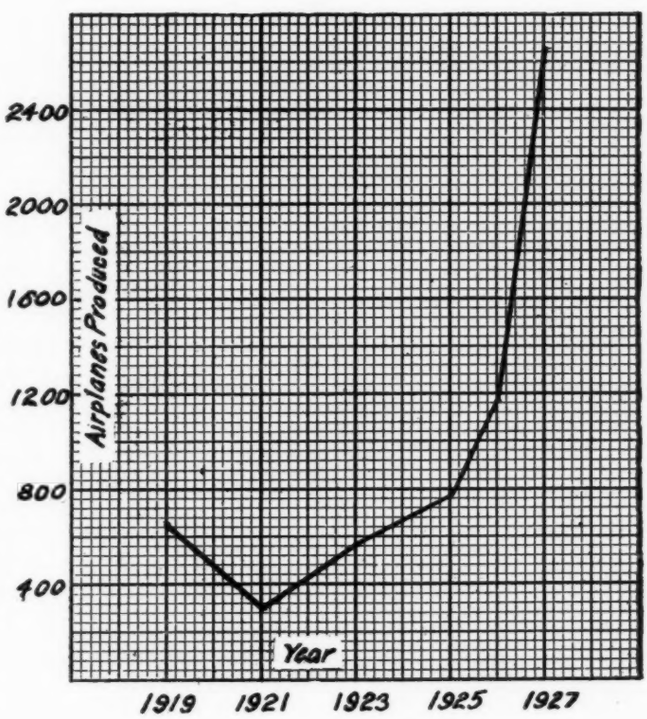
Replies have been received from all of the larger producers of commercial airplanes, and in most cases are published below. A few manufacturers asked that their figures not be published though their production is listed in the total number. From the data collected it is calculated that 1653 commercial airplanes were produced during 1927, and with the military craft the total heavier-than-air production, including land and seaplanes, is about 2353.

There were 364 airplanes accepted by the Navy Department during the calendar year of 1927. The only figure available on the planes delivered to the Army Air Corps was 289 delivered during the fiscal year ending June 30, 1927.



Rear quarter view of an Alexander Eaglerock. The Alexander Aircraft Co. produced 206 airplanes during 1927.

The figure of 2353 airplanes is an increase of 98.4 per cent. over the total number of airplanes produced in 1926. According to a special survey by the Department of Commerce, 1,186 airplanes were produced during 1926, and an analysis made by AVIATION, published in the issue of Jan. 31, 1927, showed that of these, 636 were commercial planes. The figure of 1653 commercial planes for 1927, shows an increase of 160 per cent. over the previous year. Since June 1, the production of airplanes has increased considerably; some manufacturers estimate that the increase has been as high as 1000 per cent. When considering this figure the trans-oceanic flights and the increase of public interest and finance must be taken into account. As some manufacturers had produced comparatively very few planes during the spring, this figure is in some cases reasonable, though an average increase of approximately 200-300 per cent. is somewhat more accurate.



Curve showing yearly airplane production since 1919.

The Department of Commerce has received 2762 applications for airplane licenses and licenses have been issued to 655 with 1645 others pending. The majority of these are in the course of inspection, completion of data, etc. According to Ernest Jones, chief of Air Information Division this number will be considerably reduced early in the year. The remainder is made up of disapprovals and cancelations or changes in applications from licenses to identification. Out of 867 applications for identification, 817 have been assigned and 50 canceled. In the Accident Report of the Department of Commerce, published in the Dec. 19, 1927, issue of AVIATION, it was stated that there were on record with the Department

999 war surplus planes of JN and Standard types of which 122 were licensed, 504 were identified and 373 pending. In addition there were 266 other war surplus planes making a total of 1,265. The Accident Report was made before the other figures given above were compiled.

Production of Commercial Airplanes and Seaplanes.

Manufacturer	No. of Employees	Production 1926	Plane	Engine	Production 1927 Open	Closed	Total
Advance Aircraft Co.	200	200	Waco 10	OX-5	350		454
			Waco 10	J-5	19		
			Waco 10	Siemens	4		
			Waco 10	Hisso	1		
			Waco 10	OXX-6	15		
			Waco 9	OX-5	65		
Alexander Aircraft Co.	160	50	Eaglerock	OX-5	205		206
			Eaglerock	J-5	1		
American Eagle Aircraft Co.	76	6		OX-5	92		92
Atlantic Aircraft Corp.[2]	230	13	Universal	J-5		23	35
			Tri-Motor	3-J5		9	
			F-7-A	Jupiter		1	
			Super-Universal	Wasp		2	
Bach Aircraft Co.			CS-4	Hisso		1	2
			Air Yacht	J-5 & K		1	
Bellanca Aircraft Corp.				J-5		1	1
Boeing Airplane Co.			40-A Mail	Wasp	25		25
Breese Aircraft Corp.			No. 5	J5		6	6
Buhl Aircraft Co.		5			13	8	21
Central States Aero Co.	25		Monocoupe	Air Cat		22	22
G. Elias & Bros.	10-54	1	Airmobile	Liberty		1	1
Fairchild Airplane Mfg. Co.[1]	200	1	F-C-2	J-5		43	50
			F-C-2	C-6		4	
			F-C-2W	Wasp		3	6
Fierce Arrow			B-5	OX-5	1		1
Irwin Aircraft Co.		4	Meteorplane	I-79	6		6
Hamilton Metalplane Co.				J-5	1		1
Heath Airplane Co.		2	Parasol		15		15
International Aircraft Co.					32		32
Ireland Aircraft, Inc.	22	10	Neptune	J5	1		1
Keystone Aircraft Corp.	350	3	Pathfinder	3-J5		1	9
			Pronto	J5	6		
			Puffer	J5	2		
Kreider-Reisner Aircraft, Inc.	44	5	Challenger	OX-5	8		8
Messer Aeronautical Industries, Inc.	5		Experimental	OX-5	1		1
Mohme Aircraft Corp.					1		1
Moundsville Airplane Corp.	3		Experimental	exp.	1		1
National Airways System, Inc.	25-30			OX-5	55		55
Pheasant Aircraft Co., Inc.	25			OX-5	11		11
Pitcairn Aviation, Inc.		12	PA-3	OX-5	30		49
			PA-3	K-6	2		
			PA-4	OX-5	5		
			PA-5	J-5	12		
Prudden-San Diego Airplane Co			3-RS			1	1
Sikorsky Mfg. Co.		2	S-36	2-J5	1	4	7
			S-37			2	
Stinson Aircraft Corp.	75	10	Monoplane	J5		50	55
			Biplane	J5		5	
Stout Metal Airplane Co.		3	4 AT	3-J5		12	12
Swallow Airplane Mfg. Co.	56	40	Swallow	OX-5	100		104
			Swallow	Hisso	3		
			Monoplane	J5		1	
Travel Air Mfg. Co.	165	64	No. 2000	OX-5	126		158
			No. 3000	Hisso	4		
			No. 4000	J5	14	14	
			No. 5000	J5			
Wallace Aircraft Corp.	5		A-3100	OXX6	1		2
			X-2090	OX-5		1	
Total		431			1229	216	1445
Airplanes produced by other known manufacturers (some are estimated)		205			74	34	108
Airplanes produced by individuals and others not listed							100
Total commercial airplanes produced		636			1303	250	1653
Planes produced for government (approx.)							700
Total airplanes produced							2353

[1]Production started June 15

[2]Includes commercial planes purchased by U. S. and Canadian governments.

The Advance Aircraft Co., Troy, O., is now producing three planes a day of which 95 per cent. are being shipped in carload lots. In Denver, Colo., the Alexander Aircraft Co. is producing two planes a day and expect to produce four times as many planes in 1928 as in 1927. In addition a Whirlwind cabin monoplane is being designed and production is planned for 1928. The Bach Aircraft Co., Inc., Santa Monica, Calif., is at present in production on ten "Air Yachts" on order from the West Coast Air Transport Co. These planes will be powered with one Pratt & Whitney "Wasp" engine on the fuselage and two Ryan-Seimens engines below the wing. A new plant is now being completed at Clover Field, and when it is completed production will be materially increased. The Central States Aero Co., Davenport, Ia., states that its production is seriously handicapped through

Front quarter view of a Swallow biplane. The Swallow Airplane M'f'g Co. produced 104 planes during 1927.

lack of available engines. G. Elias & Bros., Buffalo, N. Y., is also held up by the lack of engines as are many other organizations. It is planning production on a small low powered cabin monoplane. The one amphibian built by Ireland Aircraft, Inc., was for experimental purposes and production is under way on a number of planes of this type. In all it has been estimated that 179 airplanes are now being produced each month.

In 1926 there were 67 establishments producing airplanes, and in 1927 this figure was increased to 103, not including the many individuals who built planes of which we have no record at this time. Since 1921, the number of aircraft manufacturers in the United States has been increasing. The year 1926, showed an increase of 23 over the previous year making the number 67. This year, to the writer's knowledge, there were 36 new companies organized bringing the number of airplane manufacturers in the United States up to 103. The figure 103 is low as there are many new companies being formed.

Total American Aircraft Production

	1919	1921	1923	1925	1926	1927
Establishments	31	21	33	44	67	103
Airplanes	432	290	505	711	1125	
Seaplanes, Flying Boats	230	12	82	78	61	
Total aircraft produced	662	302	587	789	1186	2353
Under construction at end of year	341	374	281	259	508	
Value of aircraft and engines				$12,524,719	$24,161,752	

*Figures through 1926 by Department of Commerce.

There has been considerable speculation regarding the center of the aircraft industry in the United States. It seems that the state of California leads with 21 establishments producing commercial airplanes, though it is in sixth place in regard to the total number of airplanes produced. Ohio pro-

duced more commercial airplanes than any other state though it is in fifth place regarding the number of manufacturers. The area within 200 mi. of New York City ranks even with California in the number of commercial manufacturers and it must be considered that this area is as compact, geographically, as the State of California. It seems that there are three areas in which the aircraft industry is concentrated; California, the industrial Atlantic seaboard (the area about New York) and the mid-continent section (the area about Wichita, Kans.). The two largest manufacturers of commercial airplanes do not lie within any of these areas, the Alexander Aircraft Co. in Denver, Colo., and Advance Aircraft Co. in Troy, O. The city of Wichita, Kans., is close to the geographical center of the United States making it equally close to its various markets. Some manufacturers have stated that they intend to establish assembly plants at various points so located that one can fly a plane home in one day. It seems that the question of proximity to raw materials is more important than the proximity to the market, in the future location of the industry in the United States. The following data forms the basis for the figures given above:

The Geographic Distribution of Airplane Manufacturers.

American Aircraft Productions

State	No. of commercial establishments 1926	No. of commercial establishments 1927
California	6	21
New York	12	14
Michigan	9	9
Illinois	5	8
Ohio	5	7
Kansas	2	6
Missouri	4	4
Pennsylvania	4	3
New Jersey	3	3
Maryland	2	2
Wisconsin		2
Nebraska		2
Texas		2
Other states with one or two each		19
		103

State	Commercial Production 1926	1927
Ohio	214	460
Kansas	104	272
Colorado	50	206
Missouri	6	105
Michigan	21	105
California	71	91
Illinois	11	83
New York	35	62
Pennsylvania	15	58
New Jersey	14	38
Iowa		22
Nebraska	79	15
Maryland	5	8
	625	1525
Other States	14	128
	639	1653

When the factories producing airplanes for the government are considered these figures are somewhat changed, as New York ranks first in the number of government producers with four factories in the state devoted entirely to government work and with three others that have built a small number of planes in addition to their commercial work. In addition the Keystone Aircraft Corp. factory at Bristol, Pa., brings the total number of airplanes produced in the New York area above that for any other section. Comparing the above figures with those of the year before, the distribution of the various factories producing airplanes is the same with the exception of California surplanting New York in the number of producers. Considering the total number of commercial airplanes produced, Ohio and Kansas ranked first last year, followed by Nebraska and California. Of course when considering the figures for 1926, the governmental establishments must again be taken into account giving results very similar to those for 1927. The increase in production in Kansas is due to the combined production of a number of factories while the increases in Colorado and Ohio are due to two organizations, namely the Alexander Aircraft Co. and the Advance Aircraft Co. respectively.

There are now nine established manufacturers producing aircraft engines in the United States while approximately eight more have experimental engines complete and intend to go into the production shortly. Besides the manufacturers mentioned above about seven or eight more have engines on the draughting board, or in various stages of development. In addition there are a number of foreign engines being imported with the plan to produce the engines in this country at a later date. There are two well known agencies of this type in the United States now and a number more are in the process of organization.

Five Producing Engines for the Government

Of the nine established engine manufacturers mentioned above five are producing the majority of their engines for the government though two of these five are also producing engines for commercial use. This number does not include the Fairchild Caminez engine which is primarily a commercial engine though two have been sold to the government. In addition to the above there are a number of concerns rebuilding and converting war surplus engines. A recent census of the leading agencies importing aircraft engines shows that during the month of December their orders increased considerably. One manufacturer has at this time almost as many engines en route to the United States as he had imported during the preceding 11 months. Brownback Motor Laboratories, Inc., New York City, are importing Anzani engines at the rate of 75-100 each month, and expect this figure to be increased to 150-200 with the month of February. The Ryan Aeronautical Corp., San Diego, Calif., has imported 31 Siemens-Halske engines during the year and is increasing the imports rapidly. It is understood that both of these companies intend, at a later date, to manufacture these engines in the United States under license. In addition a few Bristol engines were imported and also some Cirrus engines for use in the de Havilland Moths.

Due to the request of some engine manufacturers comparative figures on the 1927 aircraft engine production have not been published, though in the majority of cases the data has been supplied. The total production of commercial airplane engines for 1927 was close to 540, all of which were of air-cooled design. This figure is a very conservative estimate as it does not include the rebuilt and converted war surplus engines. The majority of the engine manufacturers have experimental engines of the 100-150 hp. class under development. There were very few engines under 100 hp. produced in the United States during the past year and the 60 hp. Detroit Air-Cat engine and the Irwin 20 hp. two cycle engine were the two outstanding designs. In addition there were a number of experimental low horsepower air cooled engines but only one or two of each type were built. Of the 1653 commercial airplanes produced during the year 66 per cent. or 1090 were powered with war surplus Curtiss

A line up of Waco 10's. The Advance Aircraft Co. produced 454 airplanes during the year of 1927.

OX5 engines and a smaller number with other types of war surplus engines.

There has been a great demand for the 200 hp. Whirlwind engine manufactured by the Wright Aeronautical Corp., Paterson, N. J. This company has had a very large output during the past year, the majority of which was for commercial use. Production facilities have been increased as fast as possible in order to meet the increased demand. The foundry space has been increased and there have been many changes in the machine and assembly shops. In addition there is under construction, adjoining the present factory, a new building to be used for engine assembly and testing. It is to be ready for occupancy by April. Besides the production of Whirlwinds a number of Cyclone 525 hp. engines were built and the company is now going into production on this type.

Most of the new airplane engine development is being devoted to comparatively low powered engines. There are now under construction a number of large passenger planes to be powered with engines developing approximately 425 hp. F. B. Rentschler, president of the Pratt & Whitney Aircraft Co., Hartford, Conn., has described the situation very well. He states:

"Considerable interest has been evidenced in the employment of the 400 to 500 hp. air cooled radial types of engines for commercial use. This type gives indication of probably becoming the successor of the 400 to 500 hp. water cooled engines previously in use. New types of ships for 1928 seem to indicate that the air cooled radial in the sizes from 200 to 600 hp. will not only dominate the commercial field but will be almost exclusively the engine equipment.

"The most interesting commercial application during 1927 of the 400 hp. 'Wasp' engine has been in connection with air mail operations. This engine is the standard equipment of the Boeing Air Transport Company which operates between Chicago and San Francisco. The weight saving of the air cooled engine over the previously used Liberty engine has provided for considerably more pay-load, and in addition to this, performance in all other departments has been improved, particularly with reference to maintenance and repair.

1090 OX5's Put Into Service

"In view of the facts it may safely be said that the trend of commercial aviation in this country is increasing, and that from a power plant standpoint it is almost exclusively directed toward the air cooled radial engine."

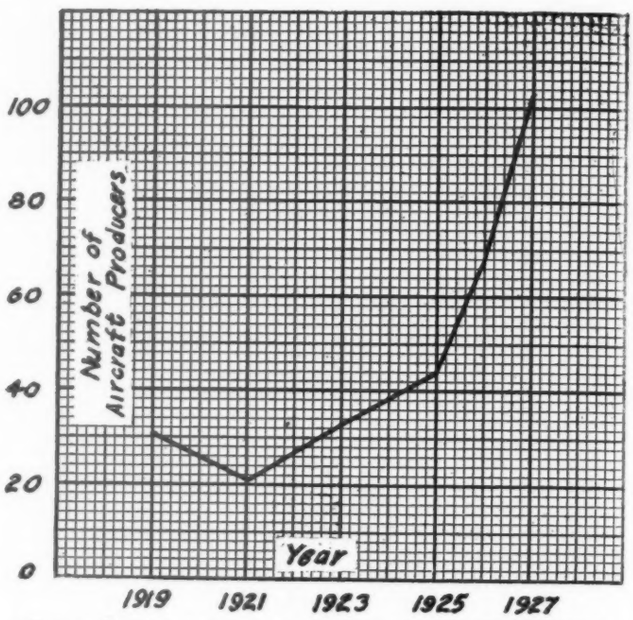
The number of airplane engines produced in 1927 when compared with the number put into use is relatively low. The majority of the engines built during the year were for military use. It is calculated that there were 1090 war surplus Curtiss OX5 engines put into service during the year. This does not include a smaller number of other war surplus engines. In addition there were approximately 100 European engines imported.

Toward the latter part of the year the lack of low powered engines began to be felt acutely. The situation is now a serious one and many manufacturers, who have every facility for the production of airplanes, find themselves handicapped by the lack of a suitable low powered engine to take the place of the almost exhausted stock of war surplus Curtiss OX-5 engines. It might be well at this time to quote W. M. Stearman, engineer at the Swallow Airplane Mfg. Co., Wichita, Kans.

"The demand for the present Curtiss OX-5 motored airplane is far in excess of production. Within the coming year the supply of OX-5 engines will have been exhausted and after this time, it seems that low priced commercial airplanes will be no longer available.

"It is my opinion, since the future purchasers will be forced to buy airplanes equipped with higher priced engines, that it will be necessary to build better airplanes having a more finished appearance and fewer of them.

"Engines, at present, are much more refined than low priced commercial airplanes. Apparently, then, the performance, mechanical details and finish must be greatly improved to be consistent with the standards of engine manufacturers. Necessarily, with the improved appearance and standardized design the trend toward too much simplicity must slowly disappear."



Curve showing increase in number of aircraft producers.

The completed figures for the export of aircraft exports for 1927, have not been compiled yet but it is expected they will exceed all previous years. The exports in airplanes, excluding engines, for the first half of 1927, exceeds the total exports for 1926. It is known that the impetus received by the trans-oceanic flights last summer increased the export airplanes, airplane engines and parts many times. The airplane exports for the first half of 1927 were $311,610 as compared with a total of $304,842 for the year of 1926. The engine exports for the first half of 1927 were $123,892, an increase of over 100 per cent. over a similar period for 1926. The majority of the airplanes exported this year were for Canada and the South American countries, with some to Europe and Australia.

Aircraft Exports from the United States

	Airplanes, Seaplanes other Aircraft		*Airplane Parts Except Tires and Engines*	*Aircraft Engines*	
	No. of Units	*Value*	*Value*	*No. of Units*	*Value*
1926	86	$304,842	$150,329	355	$583,758
1925	80	$511,282	$101,584	73	$170,793
1924	59	$412,738	$165,926	146	$219,609
1923	48	$309,051	$ 58,951	80	$ 65,558
1922	37	$157,280	$265,396	147	$ 72,917
1921	48	$314,940	$157,608		
1927					
Jan.	1	$ 19,500	$ 22,767	5	$ 43,221
Feb.	0	0	$ 51,606	3	$ 15,041
Mar.	4	$ 65,076	$ 9,437	3	$ 8,689
Apr.	9	$179,275	$ 15,233	4	$ 15,268
May	4	$ 44,314	$ 11,698	48	$ 28,303
June	1	$ 3,445	$ 34,396	6	$ 14,370
July	1	$ 11,534	$ 30,973	19	$148,767
August	7	$ 60,273	$117,598	25	$ 16,530
September	1	$ 6,000	$ 51,817	5	$ 28,784
October	16	$203,489	$111,613	16	$ 57,534
November	8	$128,000	$ 31,731	10	$ 56,838
First 11 months	52	$720,906	$488,869	144	$433,345

It might be well to analyze the airplanes produced during 1927. Of 57 different commercial airplanes manufactured

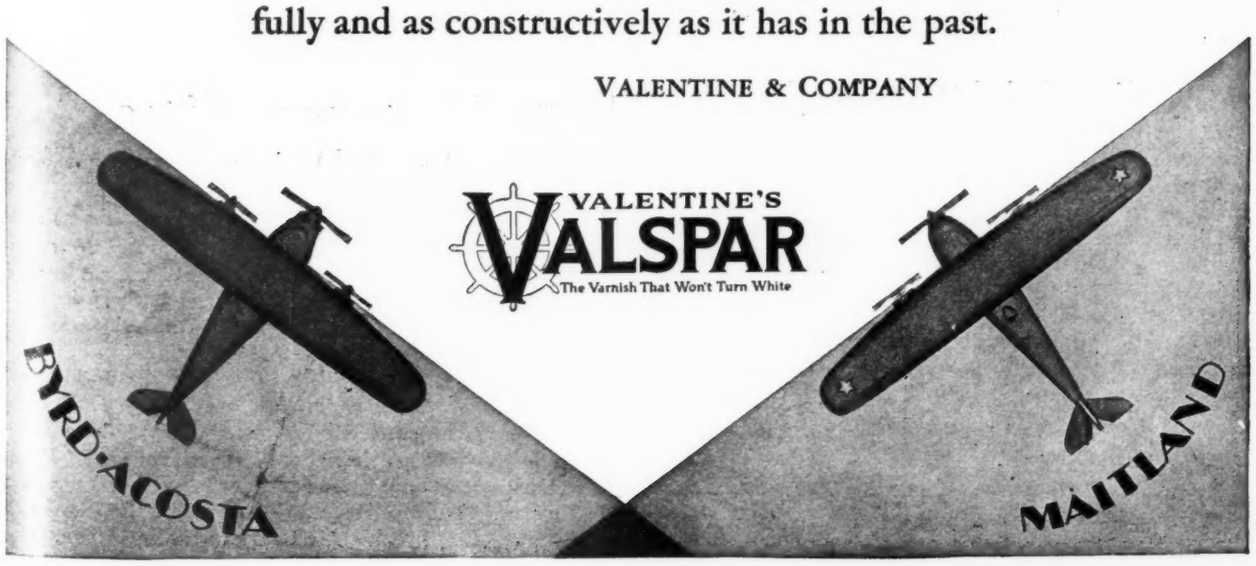
1927
A TRIUMPHANT YEAR FOR AVIATION
- AND VALSPAR

Not since the immortal Wright Brothers startled mankind with their revolutionary flights, has the world known so brilliant a year for aviation as 1927.

It is a keen satisfaction to us that, almost from the beginning of successful mechanical flight, Valspar has been helping to make aircraft history.

We look forward to yet greater prosperity for the aircraft industry in 1928 with the conviction that Valspar will play its part as faithfully and as constructively as it has in the past.

VALENTINE & COMPANY



VALENTINE'S
VALSPAR
The Varnish That Won't Turn White

on some sort of a production basis during that year 17, or 30 per cent., were monoplanes. All were of the closed cabin type with only one exception though three had open cockpits for the pilots. It is interesting to note that of the manufacturers who produced 60 or more planes during the year, all of the planes were biplanes powered with Curtiss OX-5 war surplus engines. The planes, almost without exception, were three place open cockpit cabin biplanes with a welded steel tubular fuselage and wood wings. There were 18 manufacturers producing this type, or 32 per cent. of the aircraft manufacturers. Of the 17 manufacturers producing cabin monoplanes eleven completed their first models this year and in most cases during the latter part of the summer.

Practically all of the new commercial models are monoplanes and the general trend seems to be towards the externally

Rear three-quarter view of a Travel Air biplane. The Travel Air M'f'g Co. produced 158 airplanes during 1927.

braced closed cabin type. Of the airplanes now being produced 82 per cent. have welded steel tubular fuselages and 97 per cent. have wood wings, of which nearly all are fabric covered. To the writer's knowledge there are only three manufacturers using plywood for wing covering. There are three others employing corrugated sheet duralumin for the covering of both the fuselage and the wings, the covering taking part of the load. The above figures are taken from the table of manufacturers specifications (elsewhere in this issue) though in a few cases airplanes were completed during 1927, and are not in production. In those instances the data on that plane was not listed in the table.

There are only two manufacturers in the United States producing flying boats for commercial use and in both cases they are equipped with a land undercarriage making them amphibians. Many manufacturers are supplying pontoons with their planes in place of a landing gear. In most cases the land gear can be quickly replaced converting the plane into a seaplane.

Data Checked and Rechecked

The data presented in the Specification Table is believed to be accurate as possible and includes the manufacturers' own figures. It must be remembered that the performance figures can be greatly improved by a reduction in load. It is realized that there are great possibilities for errors in a tabulation of this sort, and for that reason the figures were checked and rechecked by both the manufacturers and by AVIATION. As the table is to appear in the first issue of each month it will be possible to add other new and interesting data from time to time.

To summarize the production of airplanes in the United States during 1927, there were 2353 planes produced of which 1653 were for commercial service. Of these, 1090 were powered with Curtiss OX5 engines. Some estimates put the number of commercial planes produced at a higher figure. The Department of Commerce analysis for the first 11 months of 1927 shows a total production of 1,525, for all types of airplanes. It is said that this figure was determined from returns from one third of the airplane manufacturers, which would indicate that these manufacturers had produced 1674 airplanes in 12 months, and that the entire industry produced 5023 planes in 1927. In conclusion the writer wishes to thank the aircraft manufacturers for their cooperation in so willingly supplying the data given above.

Wies and Solomon to Fly South to Attempt World's Endurance Record

IT IS planned that on Jan. 3, George Wies and Lewis Solomon will take off in their Stinson Detroiter monoplane for Daytona, Fla. where they will endeavor to break the world's endurance record. The plane has been undergoing tests at Curtiss Field, L. I., N. Y. for the past few weeks and it was originally planned to try for the record from Roosevelt Field, which adjoins Curtiss Field. Wies and Solomon will be accompanied on their trip south by Mr. Ashly of the Tide Water Oil Co. and by Albert Slimon. It is planned to make the trip in two hops stopping over night at Langley Field, Va.

The plane is a standard Stinson monoplane powered with a Wright Whirlwind engine. The usual seats in the cabin have been replaced by a large tank and all the extra equipment such as wheel brakes, etc. have been removed.

Worcester Aero Club Is Formed With Membership of Eighty-two

THE WORCESTER Aero Club, of Worcester, Mass., has been chartered as a branch of the American Society for the Promotion of Aviation, having an initial membership of 82 before the charter was closed.

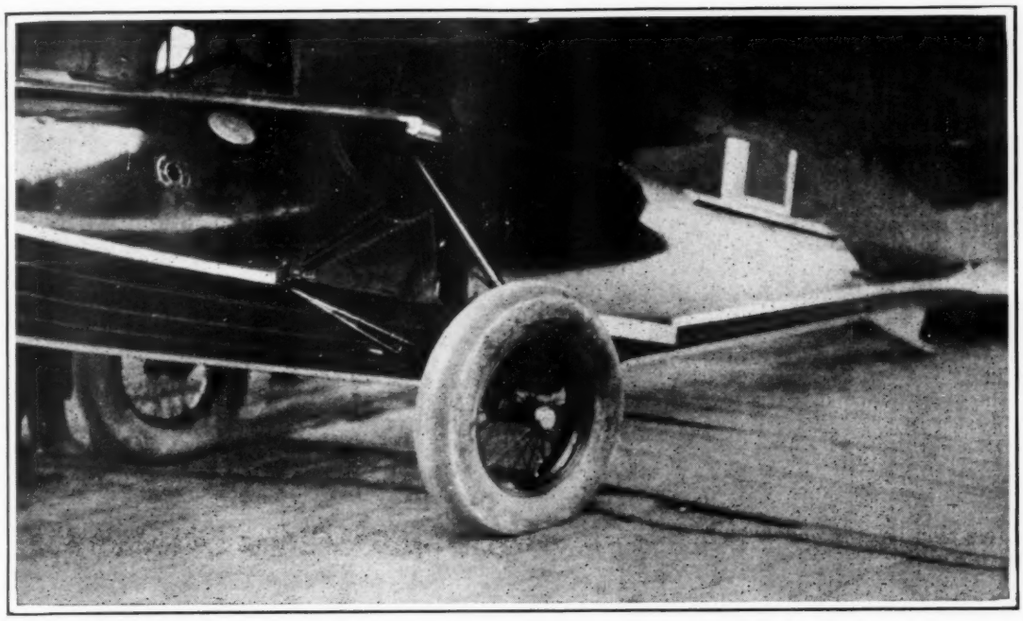
The officers of the club are: William C. Sylvester, president; Arthur DeWolfe, vice president; Eugene Dudley, recording secretary; Thomas D. Flint, financial secretary; James Dickison, corresponding secretary; Alec N. Barrett, treasurer; Walter Richford, sergeant-at-arms; and Paul Savage, photographer.

The club plans to hold regular meetings during the winter months with leaders of the aviation interests of the country as speakers. Many of the members were fliers during the War and others are planning to enter the course of instruction at Whittall Field.

Pacific Air Transport Adds a Travel Air Plane to its Fleet

THE PACIFIC Air Transport operating the air mail, express, and passenger line from Los Angeles to Seattle has purchased a notable plane to augment its present fleet of ten. It is the Travel Air with Wright engine flown by N. C. Lippiatt in winning the recent Class A Air Derby from San Francisco to Spokane.

The plane is fast and will fit in well on the rapid Coastwise service now being maintained over this long route of alternating mountain ridges and long valleys. In a recent test flight by Grover Tyler, general superintendent of Pacific Air Transport, the air speed indicator showed 140 m.p.h. at 1650 r.p.m. The elapsed time made by Mr. Lippiatt in the San Francisco to Spokane Air Derby was 8 hr. 15 min.



LANDING GEAR OF LOENING AMPHIBIAN—ARMY TYPE OA-1C

AMONGST the many improvements on the Army's newest type of Amphibian, recently delivered—the OA-1C—are large oversize tires which permit manoeuvering on extremely soft and muddy fields.

Another step in the continued perfection of "The Plane that Does the Hard Work for America."

LOENING AERONAUTICAL ENGINEERING CORPORATION

31st STREET AND EAST RIVER, NEW YORK CITY

MANUFACTURERS' SPECIFICATIONS ON AMERICAN COMMERCIAL AIR

THE TABLE BELOW IS BELIEVED TO BE ACCURATE BUT AVIATION DOES

MANUFACTURERS	Designation	Price of plane at factory	Type	No. of seats	Make of engine	Make of propeller	Span	Wing Area	Length Overall	Height Overall	Weight empty, with water if water cooled engine is used	Pay load	Disposable load	High speed in m. p. h.
Advance Aircraft Co.	Waco 10	$2,385	OB	3	OX5	Hm, Hz, SS	30' 8"	272	23' 3"	9' 5"	1199	800	800	100.6
Alexander Aircraft Corp.	Eaglerock	$2,475	OB	3	OX5		36' 3"	330	24' 11½"	9' 11"	1380		830	100.6
Alexander Aircraft Corp.	Eaglerock	$2,475	OB	3	OX5		38'	360	24' 11½"	9' 11"	1400		850	97
American Eagle Aircraft Co.		$2,450	OB	3	OX5	Hm, Hz	30'	300	24' 6"		1227	840	830	101
Atlantic Aircraft Corp	F-7	$40,000	CM	10-12	3-J5	Hm	63' 3"	630	49' 2"	12' 9"	5270	2100	3690	122
Atlantic Aircraft Corp.	Universal	$12,500	CM	5-7	J5	Hm, Hz	47' 9"	341	33	8' 9"	2100	1200	1900	120
Atlantic Aircraft Corp.	Univ.-Sea.	$15,000	CMW	5-7	J-5	Hm, Hz	47' 9"	341	35' 10"		2406	908	1594	115
Atlantic Aircraft Corp.	Wasp-Univ.		CM	5-7	P&Ww	SS	47' 9"	341	36'		2500	750	1700	140
Atlantic Aircraft Corp.	Super-Univ-	$18,700	CM	5-7	P&Ww	SS	52' 9"	380	36'		2750	1000	2000	135
Atlantic Aircraft Corp.	Super-Univ-	$21,700	CMW	5-7	P&Ww	SS	52' 9"	380	38' 9"		3100	950	1900	130
Bach Aircraft Co.	Air Yacht		CM	9	2-K, W		52'	412	36.1'		2650			
Bach Aircraft Co.	C-S-I		CB	3	SR		25' 6"	220	20' 4'				825	107
Breese Aircraft Co.			CM		J5		41'	260	27'	10' 6"	1550		1000	130
Bird Wing Commr. Airplane Co.	No. 6	$2,450	OB	3	OX5	Hz	31' 4"	303.5	23' 6"	8' 7"	1267	500	1000	90
Boeing Airplane Co.	40A		OB	1-3	P&Wh	HmM	44' 2"	545	38' 3"	11' 7"		1600		130
Buhl Aircraft Co.	CA-5	$12,500	CB	5	J5	SS	42'	320	28	14'	2072	100	1628	120
Central States Aero Co.	Monocoupe	$2,375	CM	2	AC		30'	150	20	6' 3"	650			102
Crawford A. & M. Mfg. Co.	A1	$1,500	OM	2	LR		30'	150	17' 9"	8'	950		450	95
E. M. Laird Airplant Corp.	Commercial		OB	3	J5	SS	34'-30'	300	23' 6"	9' 3"	1550	800		130
E. M. Laird Airplane Co.			OB	3	OX5	Hz	34'-30'	300	23' 6"	9' 3"	1350	300		95
E. M. Laird Airplane Co.			OB	3	C6	Hz	34'-30'	300	23' 6"	9' 3"	1500	500		120
Fairchild Airplane Mfg. Co.	FC-2W		CM	5	P&Ww	SS	50'	332	30' 11"	9'	2418	970	2182	140
Fairchild Airplane Mfg. Co.	FC-2W		CMW	5	P&Ww	SS	50'	332	33' 4"	12'	2770	1130	2380	130
Fairchild Airplane Mfg. Co.	FC-2 land		CM	5	J5	CR	44'	290	30' 11"	9'	2150	845	1500	122
Fairchild Airplane Mfg. Co.	FC-2 sea		CMW	5	J5	CR	44'	290	32' 5"	11' 5"	2412	833	1488	112
Driggs Aircraft Corp.	Dart II	$1,750	OB	2	3A2	Hz	28'	140	19' 6"	6'	400		380	85
G. Elias & Bros.	M-1	$7,500	OB	1	L12	CR	40'	497	28'	12'	2857	1200	2010	126
G. Elias & Bros.	Airmobile	$7,500	OB	3	L12	CR	40'	435	28'	11' 3"	2759	420	1290	146
Hamilton Metalplane Co.	Landplane		CM	6	J5	Hm	48'	300	34' 5"	8' 1"	1860		2000	120
Hamilton Metalplane Co.	Seaplane		CMW	6	J5	Hm	47'	300	34' 10"	9' 1"	2150		160	110
Heath Airplane Co.	Parasol	$41,695	OM	1	H	own	23'	94	16' 9"	5' 11"	290		225	70
International Aircraft Corp.	F-17	$2,750*	OB	3	OX5	Hm	35'	325	25	9' 6"	1300	400	821	100
International Aircraft Corp.	F-17	$2,900*	OB	4	Hisso		35'	325	25		1400	400	1139	120
International Aircraft Corp.	F-17	$2,900*	OB	4	J5	SS	35'	325	25		1350	400	1239	140
International Aircraft Corp.	F-18	$2,250*	OB	4	J5	SS	37'	360	27' 6"	10' 6"	1550	1000	1843	130
Ireland Aircraft, Inc.	Neptune	$14,600	OBA	5	J5	CR	40	350	31' 6"	9'	2000	800	1358	95
Irwin Aircraft Co.	M-T-2	$1,165	OB	1	I79	own	20'	105	13' 6"	5' 9"	250	100	150	90
Irwin Aircraft Co.	44	$1,950	OB	3	2-I79	own	27	180	18	6' 9"	370	400	200	90
Irwin Aircraft Co.	C-C-1	$1,350	OB	1	I79	own	21' 6"	111	14	5' 9"	250	150	150	85
Keystone Aircraft Corp.	Pronto		OB	3	J5		39' 11"	365	26' 9"		1975		1310	115
Keystone Aircraft Corp.	Pathfinder		CB	12	3-J5		66' 6"	1150	40' 4"		6536	1900	4485	115
Kinner A. & M. Co.	Airster	$3,350	OB	2-3	KE3	S	28' 6"	236	21' 3"	8' 5"	850	330	700	110
Kreider-Reisner Aircraft, Inc.	Challenger	$2,785	OB	3	OX5	Hz, Hm	30' 1"	296	23' 9"	9' 4"	1189	412	811	105
Lincoln Aircraft Co.	L'ncln-Page		OB	3	OX5		32'	300			1200	450	1000	10
Lockheed Aircraft Co.	Vega	$12,500	CM	5-7	J5	SS or We	41'	275	27' 6"	8' 6"	1650	1000	1550	13
Lockheed Aircraft Co.	Air Exp.	$15,500	CM	5-7	P&Ww	SS	41'	275	27' 6"	8' 6"	1850	1000	1845	16
Lockheed Aircraft Co.	Air Exp.	$17,500	CMW	5-7	P&Ww	SS	41'	260	31' 6"	9'	1950			160
B. F. Mahoney Aircraft Corp.	Ryan B1	$9,700	CM	5	J5	HmW	42'	290	27' 9"	9' 10"	1800	1000	1300	12
Mohawk Aircraft Corp.	Pinto	$2,875	OM	2	AC	Hz	30' 6"	124	20' 2"	6' 3"	700		500	11
National Airways System, Inc.	Model 27	$2,395	OB	3	OX5	Hz	31'	310	25' 5"	9'	1290		800	9
Pheasant Aircraft Co., Inc.	H-10	$2,375	OB	3	OX5	Hz	32' 6"	283.2	23' 6"	9'	1297	600	785	10
Pitcairn Aviation, Inc.	PA-5	$10,000	OB	1-3	J5	SS	33'	252	22' 10"	8' 10"	1612	500-600		13
Pitcairn Aviation, Inc.	PA-4		OB	3	OX5	Hz	30'	226	21' 10"	8' 7"	1165		785	101
Prudden-San Diego Airplant Co.			CM	7	3-RS7		52'	350	35'	10'	2250		1500	11
Sikorsky Mfg. Co.	S-36		OBA	8	2-J5		72'	668	34"	12'	4600		3000	11
Sikorsky Mfg. Co.	S-37		CB	18	2P&Wh		100'	1049	45' 6"	16' 3"	8000	4060	7000	12
Stearman Aircraft Co.	C-2-A	$3,575	OB	3	OX5	Hm	35'-28'	926	24'	9'	1336	320	720	9
Stearman Aircraft Co.	C-2-B	$8,730	OB	3	J5	Hm	35'-28'	296	23	9'	1438	400	962	13
Stinston Aircraft Corp.	SB-1	$11,000	CB	5	J5	SS	35' 10"	354	28' 10"	10' 3"	1810		1470	11
Stinston Aircraft Corp.	SM-1	$12,500	CM	6	J5	SS	45' 10"	292	32'	8' 3"	1970		1515	12
Stout Metal Airplane Co.	4 AT		CM	10	3-J5	SS & Hm	74'	785	49' 10"	12' 8"	6200		3800	11
Swallow Airplane Mfg. Co.	Commercial		OB	3	OX5		32'	300	24'	8' 6"	1300		950	9
Thunderbird Aircraft, Inc.			OB	3	OX5	CR	33	300	25' 6"		1300			11
Travel Air Mfg. Co.	2000	$2,950	OB	3	OX5	HmHz	34' 8"	296	24' 2"	8' 9"	1350	350	750	10
Travel Air Mfg. Co.	4000	$9,100	OB	3	J5	Hm	34' 8"	296	23' 6"	8' 9"	1400	600	1000	13
Travel Air Mfg. Co.	5000	$12,000	CM	5	J5	SS, Hm	50' 5"	308	30' 5"	8' 9"	2160	750	1440	12
Whites Aircraft	Hum. Bird	$2,150	OB	3	OX5	Hz	33' 1½	318	23' 6"	8' 3"	1050	450	850	9
Western Airplane Corp.	King Bird	$2,500	OB	3	OX5	Hz	35'	320	25' 4"	9'	1200	600	800	9

TYPE: All are land planes unless stated otherwise.

C—Closed
O—Open
S—Semi-closed
M—Monoplane
B—Biplane
A—Amphibian
W—Seaplane

ENGINE: One engine unless stated in italics.

3A2—Anzani
OX5—Curtiss
AC—Detroit Air Cat
H—Henderson
I79—Irwin
LR—LeRhone
W—Waterman
L—Liberty
P&Wh—Pratt & Whitney Hornet
P&Ww—Pratt & Whitney Wasp
J5—Wright Whirlwind
RS—Ryan Siemens
C6—Curtiss
*—Price without engine

PROPELLER:

Hm—Hamilton
Hz—Hartzell
SS—Standard Steel
CR—Curtiss Reed
S—Story
We—Westinghouse
W—Wood
M—Metal

This table will appear monthly and all corrections are invited

AIRPLANES AND SEAPLANES AS COMPILED BY AVIATION

DOES NOT ASSUME RESPONSIBILITY FOR THE FIGURES GIVEN

Disposable load	Performance with full load at sea level as supplied by manufacturers.					Fuel capacity in gallons	Normal range in miles	Normal fuel consumption at cruising speed Gal per hr.	Fuselage construction	Wing construction	Are wings wired for lighting?	Type of control	Brakes	Type of shock absorber	Type of pontoons provided for	Additional cost of pontoons	Has type certificate been granted by the Dept. of Commerce?	Performance figures guaranteed?
	High speed in m. p. h.	Cruising speed in m. p. h.	Landing speed in m. p. h.	Climb at sea level in f. p. m.	Climb to 10,000 in minutes	Service ceiling in feet												
800	160.6	95	30-40	750	29	12000	37-60	550	7.5	Wl-ST	Wd-F	No	SPD	Extra	Hy	EFHm	$1,100	Yes	No
830	100.6	87	34	514		10200	46	435	10.3	Wl-ST	Wd-F		SCD		RC	E		Yes	
850	97	85	30	600		11000	46	425	10.2		Wd-F	$20 ex.	SCD		RC	E		Yes	
830	101	85	30	575	45	12000	42	425	7.5	Wl-ST	Wd-F	No	SPD	Extra	R	E	$990	Yes	Yes
3690	122	100	55	720	24	12500	185	580	32	Wl-ST	Wd-P	Yes	CDeD	Yes	RC			Apl	5% N
1900	120	100	48	500	40	11500	78	600	12	Wl-ST	Wd-P	Yes	SCD	Extra	RC		$2,500	Yes	5% N
1594	115	93	48	500	40	11000	78	550	13	Wl-ST	Wd-P	Yes	SCD	Extra		Hm		Yes	
1700	140	120	50	1250	13	21000	117	700	20	Wl-ST	Wd-P	Yes	SCD	Extra	RC	Yes			
2000	135	117	42	1300	11	19600	120	700	20	Wl-ST	Wd-P	Yes	SCD	S-B	RC	Yes		Apl	
1900	130	113	46	1200	13	18500	120	675	20	Wl-ST	Wd-P	Yes	SCD					Apl	5%
		100	45				150								O				
825	107	90	35	500						Wd, P	Wd-F								
1000	130		40	900		15500	80			Wl-ST	Wd-F				RC				
1000	90	80	30	450	85	10000	35	325	9	Wl-ST	Wd-F	Yes	DSC&P	Extra	RC	E	$900	Apl	Yes
	130		54	770	19.5	15000	100			Wl-ST	Wd-F	Yes	S	Yes	O			Yes	
1628	120	95	50	700	45	13500	70		15	Wl-ST	Wd-F	Yes	SC	Yes	RD	Metal	$2,500	Yes	
	102	87	35	700	35		25	400	4	Wl-ST	Wd-F	Yes	SP		RC				Yes
450	95	64	47			18000	40	500	6	ST or Wd	Wd-F	No	D		RC			No	
	130	110	40	1350	10		80	600		DT, S	Wd-P		SPA						
	95	83	40	600		16000	60	600		DT, S	Wd-F		SPA						
	120	100	45	1000		18000	75	600		DT, S	Wd-F		SPA						
2182	140	120	55	1250	12	18000	160	1050	18	Wl-ST	Wd-F	Yes	CP-S	Yes	Hy	F		Yes	
2380	130	110	58	1050	21	12000	160	950	18	Wl-ST	Wd-F	Yes	CP-S			F		Yes	
1500	122	103	53	580	27	13100	110	710	15.5	Wl-ST	Wd-F	Yes	CP-S	Yes	Hy	F		Yes	
1488	112		53	420	36	12700	110	650	15.5	Wl-ST	Wd-F	Yes	CP-S			F		Yes	
380	85	75	35	580		15000	10	225		Wl-ST	Wd-D-F	No	SC	No	RC	None		Yes	
2010	126	105	47	1250	19	15000	100	525	20	Wl-ST & D	Wd-F	Yes	SC	No	TR			No	Yes
1290	146	125	45	1660	10	16000	100	625	20	Wl-ST	Wd-F	Yes	SC	No	RC				Yes
2000	120		50							D-corrug.	D-corrug.								
160	110		50							D-corrug.	D-corrug.								
225	70	65	32	200			33	120		R-ST	Wd-F	No	SC	No	RC				
821	100	87	35	600		10500	40	450		Wd			S	Extra	O			Apl	5%
1139	120	105	37	800		12000	66	550		Wd	Wd-F		S	Extra	O			Apl	5%
1239	140	120	35	1000		16000	66	700		Wd	Wd-F		S	Extra	O			Apl	5%
1843	130	110	40	800		15000	106	1000		Wd	Wd-F		S	Extra	O			Apl	5%
1358	95	85	46	650	35	11000	71	500	12	Wd, D	Wd-F	Yes	DeD	No	O		$1,000	Apl	5%
150	90	75	28	400	65	12000	8	300	1.7	Wd	Wd-F	Yes	SC		RC	Wood	$175	Yes	6%
200	90	75	30	600	60	12000	20	500	3.4	Wd	Wd	Yes	SC	No	RC	Wood	$225	Apl	6%
150	85	75	26	400	75	12000	10	400	1.7	Wd	Wd	Yes	SC	No	RC	Wood	$175	Apl	6%
1310	112			800		14000	60			Wl-ST	Wd-F								
4485	112		57	570				500		Wl-ST	Wd-F								
700	110	90	35	750	45	14000	27	400		Wd	Wd-F	No	SD	No	RC				Yes
811	102		40	540		12000		400		Wl-ST	Wd-F	Extra	SD	No	RC	EHm	$1,000	Yes	5% N
1000	100		35	600			42	500		WlST	Wd-F								
1550	135	110	50	1000	16	15900	100	700	10	monocoque	Wd-P	Yes	SC	Hy	RHy	E		Apl	5%
1845	167	135	55	1460	10	17250	100	1000	18	monocoque	Wd-P	Yes	SC	Hy	RHy			Apl	5%
	160	135	55	1250	13	16000	100	700	18	monocoque	Wd-P	Yes	SC					Apl	5%
1300	126	108	49	1000		16000	83	700	10-11	Wl-ST	Wd-F		SC	Extra	RCT	E		Apl	Yes
500	110	90	35	800				360		Wl-ST	Wd-F	Yes	S		O				
800	93	85	35	600		15000	35	396	8	Wl-ST	Wd-F	No	S	No	RC		$1,000	Apl	
785	100	90	35	500	25	12500	38	400	9	Wl-ST	Wd-F	Extra	SPD	Extra	RC	EHm	$900		5%
	136	105	45	1600		11000	60	600		Wl-ST	Wd-F	Yes	S	Yes	Aerol			Yes	Yes
785	1015	82	45				35	400		Wl-ST	Wd-F		S						
1500	115	100	52	500		10000		400	21	D-corrug.	D-corrug.				Gruss				
3000	115	100	51	400		11000	326	1000	25	Wd-D	DOR&B		DDe		RDO				5%
7000	122	112	58	650		16000	370	790	50	DOR&B	DOR&B		DDe	Hyd	RDO			Apl	5%
720	94	78	38	400		8000	37	400	7	Wl-ST	Wd-F	Yes	PC	Own	RHy	D		Apl	Yes
962	130	110	41	1000		18000	65	620	11.5	Wl-ST	Wd-F	Yes	PC	Own	RHy	D	$1,200	Apl	Yes
1470	118	100	46	600		13500	70	600	11.5	Wl-ST	Wd-F	Yes	DDe	Stand		M	$2,500		5%
1515	128	105	55	750		14000	90	700	11.5	Wl-ST	Wd-F	Yes	DDe	Stand	RC	M	$2,500	Yes	5%
3800	114	100	59			15000	235	500		D corrug.	D corrug.	Yes	DDe	Stand	O				
950	95		35				36		9	Wl-ST	Wd-F				RC				
	114	95	32			15000	43			Wl-ST	Wd-F		S						
750	100		40				42		8	Wl-ST	Wd-F	Yes	SP	No	RC				
1000	130		45				60		12	Wl-ST	Wd-F	Yes	SP	No	RC				
1440	123		55	750		13600	75		12	Wl-ST	Wd-F	Yes	SC	Yes	RC				
850	97	90	35	600		14000	40	350	8	Wd&Wl8	Wd-F	No	S		C	E		Apl	5%
800	95	85	30	600	20	12000		500	8	Wl-ST	Wd-F	No	DSC	No	RC	Own	$1,000	No	5%

FUSELAGE AND WING CONSTRUCTION:
Wl—welded
R—Riveted
S—Steel
Wd—Wood
D—Duralumin
T—Tubing
O—Open section
B—Bolted
P—Plywood cover
F—Fabric cover

BRAKES:
S—Sauzedde
B—Bendix
L—Lockheed

LIGHTS:
N—Navigation lights

CONTROL:
C—Cables
P—Push rods
De—Deperdussin
S—Stick
D—Dual.
A—Arens

SHOCK ABSORBER:
Hy—Hydraulic
R—Rubber
C—Chord
D—Compression
T—Trombone
O—Oleo

GUARANTEE:
N—New

PONTOONS:
E—Edo
Hm—Hamilton
F—Fairchild
M—All metal.
D—Duralumin

TYPE CERTIFICATE:
Apl—Applied for and is pending.

American Aircraft Products *and* Foreign Markets

Large Increase in Exports Shows That Profitable Outlets Exist

By GRISSOM E. HAYNES
Department of Commerce

THE LARGE increase in our aircraft exports in the latter months of 1927 (particularly October—the largest since the World War period) shows that a vast and profitable market for our aircraft products exists outside the United States. The sensational flights of the past year have advertised our aircraft products to the ends of the earth and have resulted in many inquiries being received by our makers from prospective purchasers and agents abroad. Some of these have been transmuted into tangible orders and shipments as is evidenced by the increased exports referred to above. Specifically our exports for the first 10 months of 1927 had a wholesale value at ports of $1,469,592 or almost 44 per cent. more than for the whole calendar year of 1926. Of this total, $372,636 was registered in October (the latest month for which figures are available) which is the highest monthly total recorded since the World War.

A Period of Negotiations

It was not to be expected that the tremendous advertising of American aircraft products experienced last summer would be immediately reflected in export statistics. Naturally there would be a period of negotiations before orders were placed. There would also be a lapse of time between the placing of orders and actual shipment and the fact that the larger number of our makers ran behind on domestic orders last year prevented many export orders from being promptly filled. Consequently the increases registered up to the beginning of the winter months is much more encouraging than the actual dollars and cents figures would indicate. If October figures referred to above are any indication of future foreign demand the winter of 1927-28 will be a period of activity on foreign orders by our manufacturers.

Our export trade in aircraft products (save for the operations of a few firms) has always been of an intermittent nature. Consequently European makers, aided by their respective governments, have systematically exploited foreign markets and have outsold our makers even in our most logical markets of the Western Hemisphere. No better example of this can be cited than the activities of Louis Breguet, the French manufacturer whose planes are distributed all over the world, enabling a production unprecedented in time of peace. French exports of aircraft products during 1925-1926 had a value of more than $16,400,000 at current rates of exchange. English exports of aircraft products have been valued at between five and six millions of dollars a year for the past several years. These examples show that a market for aircraft exists abroad and that competing makers are taking advantage of it. With the present high prestige of our planes, engines and other equipment abroad, no better time could be imagined for our makers to launch a determined campaign to get foreign orders. There is a more or less costly pioneering period in developing this trade, but the experiences of our competitors have shown this development work to be justified.

In considering future development of our potential export trade the statement can safely be made that it will be composed largely of commercial equipment. In view of the large proportion of military equipment making up our present exports, this statement sounds fanciful. However, the trend is toward self-dependence for military aviation in practically all countries today. Consequently our exports of military design will probably become more and more limited to the sale of limited numbers of units as prototypes and the invisible export item of the sales of manufacturing rights of designs on various basises for production in other countries. Commercial planes, however, will not be so hampered by the spirit of nationalism or military expediency. In fact, due to the independent character of the industry in this country, the products of our makers will have a distinct advantage in being designed solely for commercial efficiency. Foreign makers required to construct planes suiting the ideas of military aviation authorities in order to take advantage of subsidies, will be found at an operating disadvantage in competition with American equipment constructed along purely commercial lines.

These conditions prevailing, it follows that independent operators the world over will turn to American equipment solely on merit if competition enters into their operations. Efficient transportation can be sold anywhere as is proved by the case of the American automobile, and American commercial airplanes may be expected to follow in its footsteps.

Should Maintain Lead in Field

In considering our immediate problems in the export field, many advantages and disadvantages present themselves. Nowhere else in the world have purely commercial designs of aircraft, designed for efficiency in both manufacturing and operation been carried to such success as in this country. Nowhere has the development of power plants suitable for commercial purposes been so successful. No other country promises such a large domestic market, highly competitive and independent, for commercial planes and engines. With all these factors making for efficient production and marketing, it will be strange indeed if we cannot maintain our lead in this field against foreign makers.

There is no denying that our makers also work against many handicaps at the present time. Governmental aids, such as the active aid of military missions, help foreign makers in many competitive markets and in many cases various aids are given them in their manufacturing operations neither of

Aeroplanes VOUGHT

OUTSTANDING among the notable Achievements in Aeronautics during 1927 was the capture of Four World Records by the new Vought "Corsair" Airplane.

OUTSTANDING because these World Records -- One for Altitude and Three for Speed -- were made with *a strictly stock* naval service "Corsair" Seaplane.

OUTSTANDING because these records were made without special preparations, the airplane, engine and propeller being the original service equipment delivered in October 1926 and used, without changes or modifications, in all flights since delivery of the plane, even to date.

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CHANCE VOUGHT CORPORATION

LONG ISLAND CITY, NEW YORK

which can be said to be available to our manufacturers. The depreciation of certain European currency has helped some of our competitors to make sales abroad. Licensing requirements for commercial planes in many countries militate against the sale of American planes in those countries. As an instance, the "Spirit of St. Louis," which was so enthusiastically praised by French aeronautical authorities, could not be licensed in France for commercial purposes under existing regulations prohibiting tubular steel welded fuselages.

Despite the handicaps stated above, our exports of aircraft products have shown steady increases since the immediate post-war period, almost paralleling increases in production during the same period. The value of our aircraft products exports was $433,558 in 1923; $798,273 in 1924; $784,659 in 1925 and $1,027,210 in 1926. These figures are incomplete in that they do not include planes flown to other countries, such as Canada, Mexico, etc., for delivery. Figures for only the first ten months of 1927 are available but the total exports for that period of $1,469,592 are almost 44 per cent. in excess of the total for the whole year preceding. If the month of October, 1927, with exports of $372,636 can be regarded as indicating a definite trend, it is possible that 1927 exports will double those of 1926.

Canada Was Largest 1927 Market

Canada was our largest market for aircraft products in 1927, followed by Peru, Chile, Russia, Belgium, Japan, Germany and Colombia in order named. This shows that our market is not restricted to countries of the western hemisphere. South America leads the other continental areas, followed by Europe, North and Central America, and the Far East in the order stated.

This is in contrast with 1926 exports, over half of which went to Europe, the balance being divided between North and South America, with only a small total to the Far East. In the following tabulation is shown the distribution of our aircraft products by countries and continental areas on a value basis during the first ten months of 1927.

NORTH AND CENTRAL AMERICA		EUROPE	
Canada	$317,622	U.S.S. Russia	$175,528
Mexico	34,365	Belgium	84,103
Honduras	14,888	Germany	75,631
Cuba	10,849	United Kingdom	33,065
Dominican Republic	5,879	Netherlands	16,908
Panama	4,824	Switzerland	10,000
Guatemala	211	France	5,475
British W. Indies	201	Czechoslovakia	4,848
Total	$388,839	Poland	4,260
		Spain	4,100
		Italy	3,300
		Norway	2,080
		Denmark	120
		Total	$419,418

SOUTH AMERICA		FAR EAST & MISCELLANEOUS	
Peru	$234,992	Japan	$77,621
Chile	222,448	Australia	4,720
Colombia	67,844	South Africa	3,979
Argentina	19,399	Dutch E. Indies	1,115
Brazil	17,899	Philippine Islands	427
Venezuela	365	British Malaya	409
Total	$562,947	British India	339
		China	163
		Total	$98,773

Pacific Technical University Organized at San Diego, Calif.

ORGANIZATION of the Pacific Technical University was recently announced at San Diego, Calif. Within two months the University will open a comprehensive course in aeronautics, teaching by mail the theory of flight and finishing the student's education by actual factory training and flying experience under the personal supervision of instructors.

"Now that the future of commercial aviation is assured and the industry destined to grow with great rapidity," said P. H. Heron, president and chairman of the board of directors, "some facilities must be provided to furnish the trained men who will be required to keep the world's wings in motion. There is a great field for services of a properly conducted institution such as the Pacific Technical University, there can be no doubt, and it is fortunate that the first real activities along this line upon the coast are being initiated by earnest business men, aeronautical and automotive engineers and educators who realize the responsible relation which such a school will have to the future development of aeronautics."

P. H. Heron, president of Pacific Technical University.

In explaining the plans and policies of the University to a representative of AVIATION magazine, Mr. Heron stated that it is the board's purpose to conduct an institution on the highest possible standards, to solicit enrollments only from "ambitious" young men who intend to make the business of flying a lifetime profession, and not to cater to the casual student who seeks only a superficial knowledge of aeronautics.

Actual management of the affairs of the institution will be in the hands of its officers, board of directors and advisory board. P. H. Heron, president, is a graduate of Lane Technical School, Chicago Teachers' College, the United States Army School of Military Aeronautics, and the San Diego State Teachers' College. He also has had special instruction at the University of Illinois, University of Wisconsin, University of California and Armour Institute of Technology. Ray Reynolds, vice-president and treasurer, a former faculty member of the University of Arizona as an instructor of automobile engineering, is an associate member of the Society of Automobile Engineers of New York and the Southern California section. Other members are: A. R. Weiser, Secretary; Robert Huntley, Edward C. Taylor, to be in charge of Aeronautical Engineering, Mathematics and Machine Drawing; L. T. Kittredge, to have charge of seaplane construction.

The board of directors is composed of H. J. Edwards, Heron, Ray Reynolds and A. R. Weiser. The advisory board consists of Henry C. Johnson, formerly superintendent of San Diego City Schools; Lieut. Col. Charles M. Frost, coast artillery reserve; O. S. McPherson, executive manager of the San Diego Chamber of Commerce, and others.

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A book explaining all faults of the OX-5 Curtiss motor and the remedy for each fault. How to get more horsepower, efficiency, reliability and economy out of this type motor. The author has over 3500 flying hours experience with the OX-5.
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Saves 15% on gas, adds 20 to 50 revs to the motor speed, takes all noise from the overhead, greatly reduces friction in pins, bearing surfaces, valve guide and pull rod. Over one thousand sets now in use on OX's in planes, speed boats and racing cars. Standard equipment on Alexander Eaglerocks and now being adopted by other leading manufacturers.

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Preventing wear on exhaust valve guides and seats, doubles the life of the OX cylinder. The roller rolls freely acoss the valve stem end, instead of sticking and exerting a tremendous side pressure on the guide and valve seat as is the case with the former tappet. More power longer sustained.

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NEW OVERHEAD SYSTEM; self oiling practically dust proof, 100% longer life than present overhead, no more lost pins, absolutely trouble proof. The price will surprise you.

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GET MORE POWER. "Rev's for OX's" tells how. We have all parts necessary.

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Temple N. Joyce Appointed Sales Manager of Chance Vought Corp.

ANNOUNCEMENT HAS just been made by Chance Vought Corp. of the appointment of Temple N. Joyce, of Annapolis, Md., as sales manager in charge of service and sales.

Mr. Joyce, who is a war pilot of international repute, is well fitted to assist in perpetuating the well-known Vought policy of designing and producing outstanding types of military aircraft noted for superior performance and rugged construction. He will take over sales activities formerly handled by Chance Vought.

Temple N. Joyce, newly appointed sales manager of Chance Vought Corp.

Additions being made to the Vought factory and offices will double the company's facilities to take care of the rapidly increasing demand for its aircraft. While Mr. Joyce's headquarters will be at the Long Island City plant of the company, he will also maintain an office in Washington, D. C., and also spend considerable time at the company's Pacific Coast office in San Francisco.

In 1917 Mr. Joyce was commissioned in the Air Service, having resigned his activities as sales engineer with the Truscon Steel Co., and obtained his pursuit training overseas. He became a test pilot and later assistant chief test pilot, and in 1919 was made a captain. In 1923 he was commissioned major in the Army Air Service Reserve, which commission he still holds. From 1919 to 1925 Mr. Joyce was the American representative of Morane-Saulnier, the well-known French aircraft manufacturing firm.

From November 1925 to November 1927, he was the Washington representative of the Curtiss Aeroplane & Motor Company, Inc., meanwhile acting as their experimental test pilot in addition to handling sales and engineering work in Washington. Mr. Joyce's ability as a pilot has called forth much favorable comment on many occasions and this, with his knowledge of the aeronautic tactical problems of the Army and Navy Air Services, has undoubtedly been an important factor contributing a great deal to his success in airplane sales and distribution.

His interest in, and efforts toward, the development of civil aviation is indicated by his appointment on the Maryland State Aviation Commission and the Baltimore Airport Commission, and his active membership in the Flying Club of Baltimore. He takes a very active part in these organizations and has been an important factor in obtaining the new $1,500,000 airport now being developed for the city of Baltimore.

The Vought Company is completing one of the new "Corsair" high-speed two-seaters for Mr. Joyce to use in demonstrations, and in commuting by air to Washington, and for trips to the West Coast.

Strauss and Buegeleisen Low Bidder On Goggle Contract for the Navy

STRAUSS & Buegeleisen Co., of Brooklyn, was low bidder when the Navy opened recent bids for pilot type and passenger type goggles. The pilot type is a Navy development that has been recently approved. It has a special curved lens that gives an unusually wide range of vision and the frames rest on a sponge rubber mask. The passenger type is the regular Strauss & Buegeleisen "Resistal" non-shatterable lens goggle, but equipped with a sponge rubber face pad. The lens are worked to a plano and are in the conventional type frames.

The passenger type goggle is being marketed commercially and is known as the New Navy Model Resistal. The sponge-rubber face mask gives a tight fit without pressure being concentrated at any one spot. It is said to be especially comfortable about the nose. This new goggle does not interfere with a helmet or cap, is well ventilated and provides a maximum of side vision. As mentioned above the goggle is equipped with Resistal lenses and they can be supplied in any color or dimmer. Plans are also being made to market commercially the navy pilot type goggle.

National Flying Club of America Appointed Air-King Distributor

THE NATIONAL Airways System of Lomax, Ill., has appointed the National Flying Club of America, Inc., its distributor for a territory comprising Penna., N. J., N. Y., and the six New England States. Headquarters of the new distributor will be at No. 5 Columbus Circle, New York. The company will appoint dealers to represent it throughout the territory. Charles Fields is president of the National Flying Club and Sidney Glantzburg secretary. Mr. Fields is also president of the Fields Airways, and was formerly associated with the New York distributor of the American Eagle. Fields Airways conducts air tours, etc.

The National Airways System manufactures the well known Air-King airplane. During the year 1927 the company produced 55 planes. Increased production is planned for 1928.

Consolidated Gets Navy Contract For Training Planes and Parts

THE NAVY Department has awarded a contract to the Consolidated Aircraft Corp. of Buffalo, N. Y., for eight airplanes and parts at a cost of $68,830. They are training planes equipped with Wright Whirlwind engines of the type now used at the Navy's air stations.

Another contract was awarded to Tippett & Wood, Inc., Phillipsburg, N. J., for construction of a mobile mooring mast for the dirigible Los Angeles, at Lakehurst, N. J., for $27,850.

Fifth Aviation Company Files Application for Incorporation

VEALE AVIATION, Inc., of Hazelton, Pa., has applied to the Public Service Commission for incorporation as a flying service for passengers and freight. F. G. Diggeman, William H. Veale and Giles E. Phillips, of Hazelton, are the incorporators. The capital stock is $50,000.

The application is the fifth within the past month for incorporation s an aerial transportation company within the state of Pennsylvania.

In 1928 —

PIONEER INSTRUMENTS

on the TRAVEL AIR PLANE

Turn Indicator

Fuel Level Gauge

Air Speed Indicator

Magnetic Compass

Plane talk

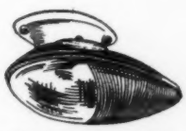
TRAVEL AIR

quality needs no introduction.

It is quite natural, then, that in 1928 Travel Air should use the Pioneer Instruments here illustrated.

When Travel Air installs Air Speed Indicators, Compasses, Bank and Turn Indicators, Fuel Level Gauges and Navigation Lights, they will be Pioneer exclusively. In fact, Pioneer Instruments are almost invariably the choice of those manufacturers who produce planes of superior quality, dependability and performance.

Pioneer Instruments cost the airplane manufacturer but little more —yet they are the best that money can buy.



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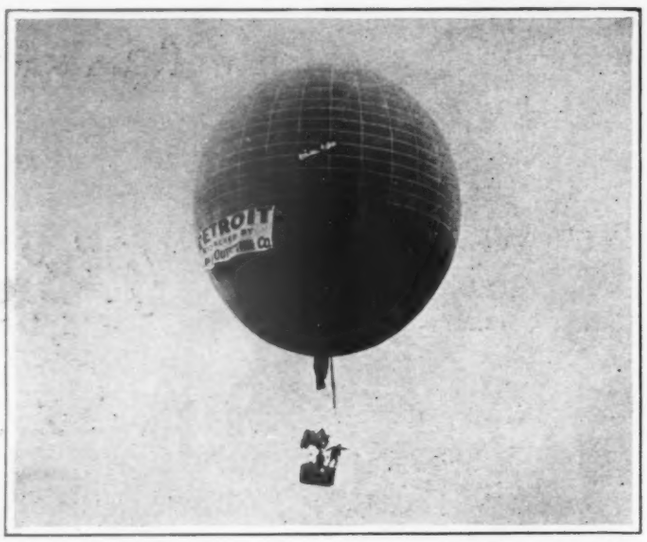
Looking Back at 1927

Cont. from page 25

by the original Wright Whirlwind engine that was in the plane on the New York-Paris flight.

Shortly before Aug. 16, there began what might be considered a black period in aeronautics during 1927. James D. Dole of Hawaii had offered $35,000 in prize money to the first two planes to make a non-stop flight from California to the Pacific Islands. Several civilians entered the race which was referred to as the Dole Derby, and due to various reasons, the principal one being insufficient time in which to prepare for the race, two fatal accidents took place before the race was even started. The original date set for the start of the race from the Oakland Airport was Thursday, Aug. 11, but as the result of an agreement between the nine entrants the race was put off until noon of the following Tuesday, Aug. 16. The race was won by Arthur C. Goebel and Lieut. W. N. Davis, U.S.N., pilot and navigator, in the Travel Air monoplane "Woolaroc" (Wright Whirlwind), which covered the distance from Oakland Airport to Wheeler Field in 26 hr., 17 min., 33 sec. Second place winner, and incidentally the only other plane to complete the flight, was the Breese monoplane "Aloha" (Wright Whirlwind), piloted by Martin Jensen with Paul Schulter as navigator, which completed the flight in 28 hr., 16 min. Of the eight planes which started the race, two crashed on the runway of Oakland Airport and three turned back, and one of these restarted two hours later. The plane piloted by J. W. Frost with Gordon Scott as navigator, was never heard from again after it had passed out over the open water of the Pacific, nor was the plane piloted by John A. Pedlar and accompanied by Lieut. V. R. Knope as the navigator and Miss Mildred Doran, the only woman in the race. After turning back from an initial attempt to make the trip Capt. Wm. P. Erwin took off again on the following morning in his plane with the intention of seeking the whereabouts of Frost and Pedlar. Sometime later he radioed word that he was in a spin and going down. That was his last message to the civilized world. As the result of these disasters many and varied protests were filed in Washington against the continuance of trans-oceanic air races, and for a time the former successes were eclipsed by the recent disasters.

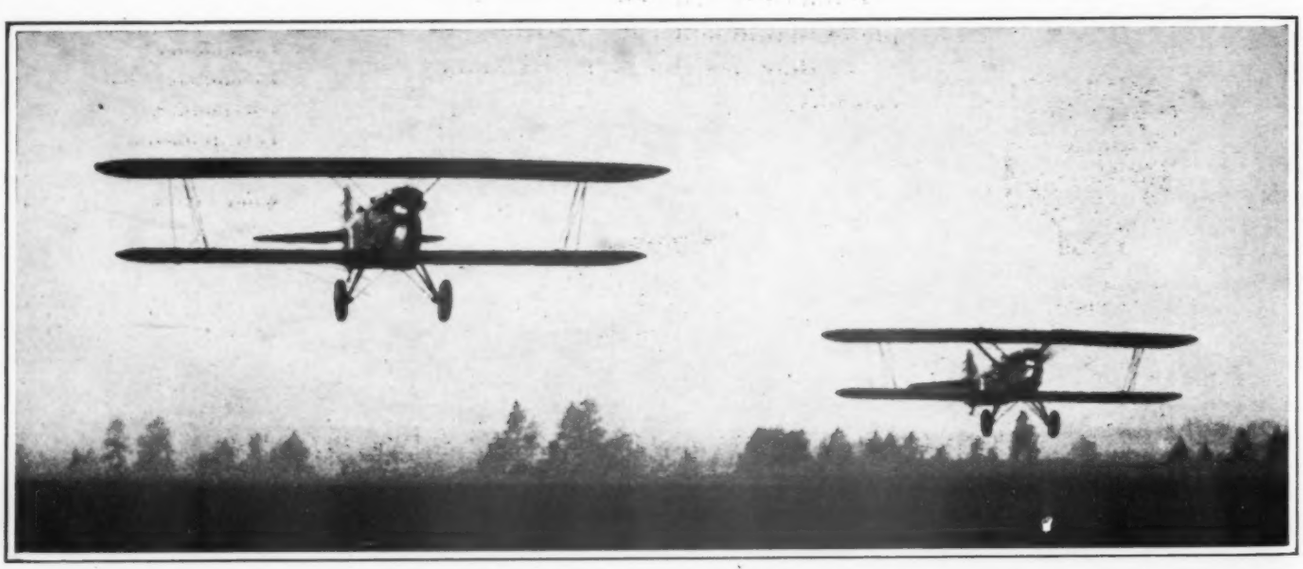
Another dark day in aeronautics in 1927, was Aug. 25. On this day Paul Redfern took off from Glynn Isle Beach, Brunswick, Ga., to attempt a 4,600 mi. non-stop flight to Rio de Janeiro, Brazil. At the time of the take off the plane carried a load of 518 gal. of gasoline which would enable Redfern to stay aloft, barring accidents, for about 52 hr. The flying schedule mapped out called for his arrival in Rio de Janeiro around 2:30 P.M., Aug. 27. Since the first night when he was sighted flying over open water by a north bound steamer, no word has been received of the pilot's fate. All efforts



The "Detroit" (Hill and Schlosser) winner of the 1927 Gordon Bennett International Balloon Race.

to locate his plane and also the planes of the missing Dole Derby fliers have proved futile.

A fourth successful aerial conquest of the north Atlantic was accomplished on Sunday, Aug. 28, when after a 23 hr. 21 min. non-stop flight start from Harbor Grace, N. F., Edward F. Schlee and Wm. S. Brock landed a Stinson-Detroiter monoplane (the National Air Tour winning plane and later christened the "Pride of Detroit") at Croydon Aerodrome, England. This flight marked the accomplishment of the first leg of a contemplated aerial trip around the world. The flight progressed successfully as far as Tokio, Japan, a distance of over 12,000 air miles. Upon arriving at Tokio, Brock and Schlee received so many requests to abandon the



The start of the Free-For-All Military Pursuit Ship Race, held during the 1927 National Air Races, at Spokane, Wash.

TO HELP YOU UP AND DOWN AGAIN

IMAGINE—dropping an automobile on two wheels! Yet airplane tires take that, perhaps many times a day. Even a perfect 3-point landing gives the tires two-thirds of the job, and more than that when the eye is bad or the field worse.

So, from the word "Contact" back to the hangar you must have tires that will help you up and then help you down again. Goodyear Airplane Tires do both. They roll easily and smoothly over soft or lumpy ground. And they'll be sound and buoyant when you level out for the finish.

Goodyear Airplane Tires are made to fit the weight and character of the ship; to stand the gaff of "Emergency Fields" and be ready for work in the morning.

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Aeronautics Department

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AIRPLANE TIRES

attempt to fly across the Pacific that they gave in to wishes of relatives and the general public and returned to the West Coast of America by boat. They had originally set out to establish a new round-the-world record, and with their arrival at Japan they were a little over one week ahead of the existing round-the-world record of 28 days.

The first trans-Atlantic failure happened on Sept. 6, when "Old Glory" piloted by James De Witt Hill with Lloyd Wilson Bertaud as co-pilot and Philip A. Payne as passenger fell into the waters of the north Atlantic while attempting a non-stop flight from Old Orchard, Me., to Rome, Italy. When last heard from the plane was five hours off the coast of Newfoundland, and in the early morning of Sept. 7, the liner California reported the plane overhead and flying well. Four hours later the steamships Carmania and Lapland picked up an S.O.S., from the plane, but no position was given. From that time on no further word was received and some weeks later a steamer picked up a section of the plane that was floating around in midocean. The plane was powered with a single Bristol Jupiter 450 hp., engine and in taking off with a full load on the beach at Old Orchard a run of approximately a mile and a half was necessary. It had been originally intended to take the plane off from Roosevelt Field, L. I., but due to the absence of a favorable wind it was decided to use the beach at Old Orchard.

On this same day, and as a matter of fact, only a few hours after the S.O.S. call had been received from Old Glory, Capt. Terry Tully and Lieut. James Medcalf took off from Harbor Grace, N. F., in their monoplane, "Sir John Carlin", bound non-stop to London, England. To all appearances the plane was functioning properly as it faded into the eastern sky. However, like some of the other ill-fated trans-oceanic planes no trace was found of either plane or its occupants once it had disappeared from view.

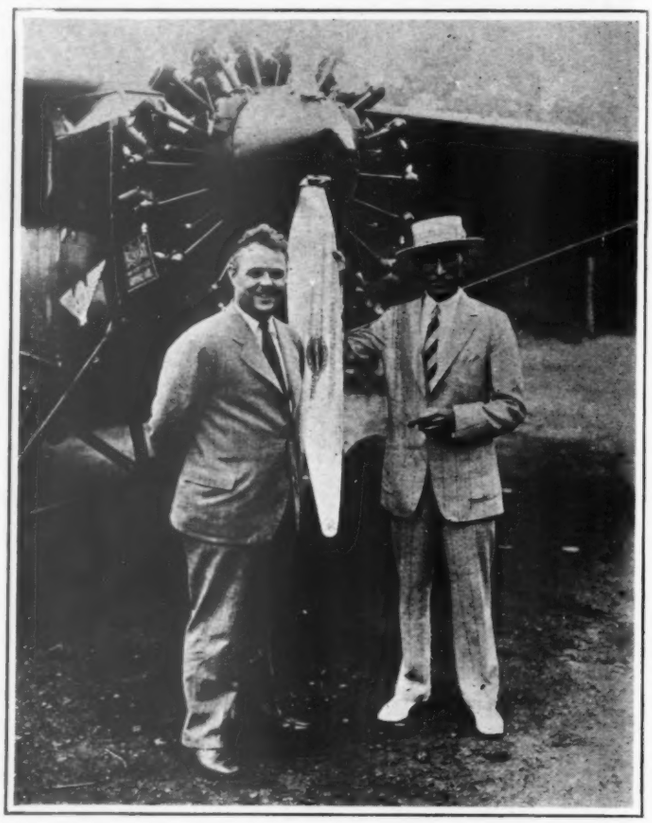
American Wins Gordon Bennett Balloon Race

Sept. 12 marked the winning for the second time in succession of the Gordon Bennett International Balloon Race. The 1927 race which was held at the Ford Airport was won by E. J. Hill and A. G. Schlosser who piloted their entry the "Detroit" to Baxley, Ga., having a total distance of 725 mi. from the starting point. Second place was also won by Americans; Ward T. Van Orman and W. W. Morton covered 675 mi. in the "Goodyear VI". Third place was tied for by German balloonist Hugo Kaulen and A. Vahl in the Barmen and the pilots of the French entry "Lafayette", each team covering 660 mi. In winning the race America retains the Gordon Bennett trophy for another year and should this country succeed in winning the 1928 race it will become the permanent owner of the trophy. The victory by Hill and Schlosser marks the sixth victory for America and places this country in the position of having won the second largest number of races. Belgium is first with five victories to its credit.

The morning of Sept. 19, saw the beginning of what is regarded as America's annual aeronautic classics, the National Air Races. On this date the planes in the Class A Derby from New York to Spokane, Wash., (where the Air Races were held) took off from Roosevelt Field and started their dash across the country. This race was won by C. W. "Speed" Holman, who piloted a Laird biplane (Wright Whirlwind) from point to point in a total flying time of 19 hr., 42 min., 47 sec. E. E. Ballough in another Laird plane finished second, and N. B. Mamer won third place in a Buhl "Airster". On the following day the planes in the Class B race took off from Roosevelt Field. This race was won by Charles W. Meyers who made the trip in a Waco 10 in the official flying time of 30 hr., 23 min., 15 sec. Second place was won by Leslie Miller in an Eaglerock plane, and another Eaglerock plane piloted by J. S. Charles won third place.

A non-stop race from New York to Spokane in which two Stinson-Detroiter monoplanes, one piloted by Eddie Stinson and the other by "Duke" Schiller and an "Air-King" biplane piloted by Jack Lacey were entered, and proved unsuccessful as both Stinson and Schiller were forced down a short distance east of Spokane and the "Air-King" failed to get started.

A Class A and Class B Derby flown from San Francisco to Spokane on Sept. 21 were won by M. C. Lippiatt and Cecil L. Langdon respectively. Lippiatt flew a Travel Air plane and his total time for the trip was 8 hr., 16 min., 37 sec. Langdon flew an International biplane and his flying time was 9 hr., 59 min., 18 sec.



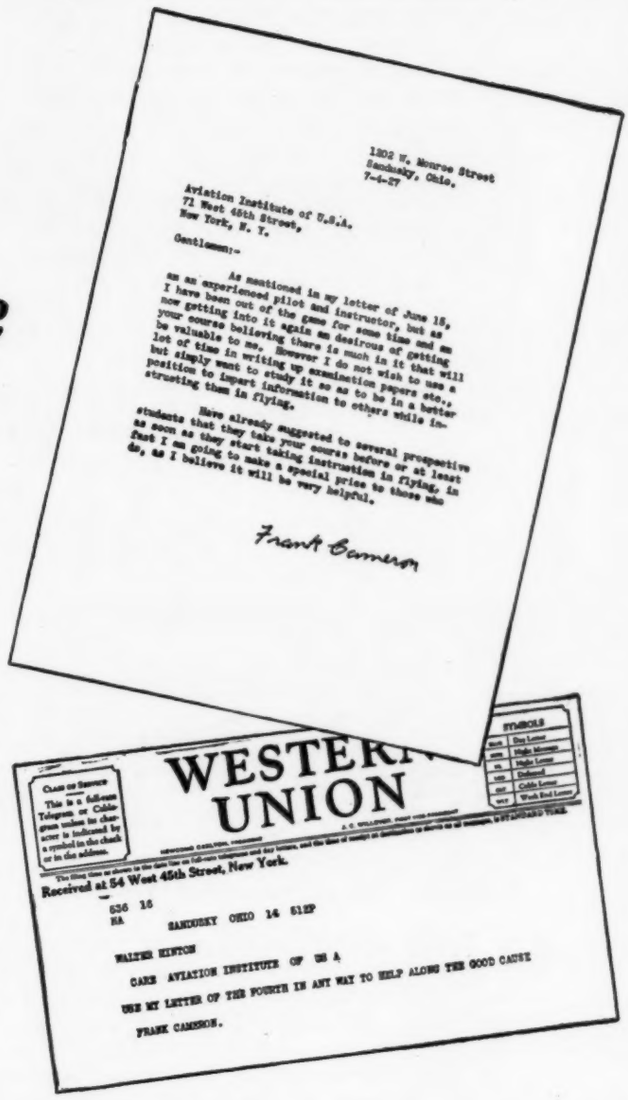
Wm. S. Brock (left) and Edward F. Schlee in front of their Stinson monoplane "Pride of Detroit"

The National Air Races themselves were held from Sept. 21-25 and during this time the visiting pilots competed in 13 different events. Space does not permit a resume of these events, but the two outstanding events were the Liberty Engine Builders' Trophy Race for Observation Planes which was won by Lieut. H. A. Johnson in a Curtiss XO-13-A plane with a speed of 170.156 m.p.h., and the Free For All Military Pursuit ship race which was won by Lieut. E. C. Batten in a Curtiss XP-6-A plane at a speed of 201.239 m.p.h.

With reference to the 1927 National Air Races the fact is worthy of mention that for the first time in history the races paid their way, according to figures filed with the National Air Derby Association of Spokane by public accountants who audited the books. Total receipts including funds raised from ticket sales, concessions and miscellaneous sources, amounted to $114,063.00, while expenditures totaled $113,106.00; in all $47,251.00 was paid out in prize money and $19,411.00 for trophies and their expenses directly incidental to contests.

Oct. 10 was the beginning of a third unsuccessful attempt

Pilot-Instructor Turns to the Institute for Further Study



1302 W. Monroe Street
Sandusky, Ohio.
7-4-27

Aviation Institute of U.S.A.
72 West 45th Street,
New York, N. Y.

Gentlemen:-

As mentioned in my letter of June 15, I have been out of the game for some time and am now getting into it again am desirous of getting your course believing there is much in it that will be valuable to me. However I do not wish to use a lot of time in writing up examination papers etc., but simply want to study it so as to be in a better position to impart information to others while instructing them in flying.

Have already suggested to several prospective students that they take your course before or at least as soon as they start taking instruction in flying, in fact I am going to make a special price to those who do, as I believe it will be very helpful.

Frank Cameron

WESTERN UNION

Received at 54 West 45th Street, New York.

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WALTER HINTON
CARE AVIATION INSTITUTE OF USA
USE MY LETTER OF THE FOURTH IN ANY WAY TO HELP ALONG THE GOOD CAUSE
FRANK CAMERON.

YOU men who are in Aviation will be interested in Mr. Cameron's letter—and in his point of view. It is sound. He is wise to seek to "be in a better position to impart information to others, while instructing them in flying."

It is always the wise men who seek to improve. They are the men who get ahead—who rise above the crowd, in more ways than one.

The Aviation Institute course of instruction is so clear, so simple that any man of average intelligence, who never before has given any study to Aviation, can master it easily at home, in his spare time. Yet it is so thorough in everything that a man needs to know of the fundamentals and principles of this great, new, growing industrial field that even experts turn to it for further study, to advantage.

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Lieut Walter Hinton, First Trans-Atlantic Pilot, N.C.4 fame, President Aviation Institute

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to fly non-stop across the Atlantic, but fortunately this time the occupants of the monoplane "American Girl", George Haldeman and Miss Ruth Elder, were rescued when their plane was forced down on open water some 325 mi. north-northwest of the Azores. The plane had taken off from Roosevelt Field in the late afternoon of Oct. 10, with a gasoline load of 520 gal. After covering approximately 3,000 mi. engine trouble developed and it was necessary for pilot Haldeman to land on the surface of the water close by the Dutch tanker *Barendrecht* which was five days out from Rotterdam bound empty for Baytown, Texas. Hardly had Miss Elder and Haldeman been taken aboard when the plane burst into flames and sank. Altering its course the tanker headed for the Azores where it safely landed the rescued aviators.

The Mitchell Trophy Pursuit plane race which has usually been held at the time of the National Air Races was flown in 1927 at Dayton, O., on Oct. 12, in connection with the dedication of Wright Field. Fifteen planes started and finished, but 10 of them were disqualified, and the race which consisted of nine circuits of a 13.96 mi. course was won by Lieut. Irving A. Woodring with an average speed of 158.96 m.p.h. The fastest lap was made by Lieutenant Kiellor with a speed of 169 m.p.h.

Lieut. "Al" Williams, U.S.N., beside his Kirkham Packard racer fitted with ground landing gear.

Although no official information has been issued relative to the speed tests conducted by Lieut. Al Williams in his Kirkham racing plane equipped with a 1200 hp. Packard X engine, it is worthy of mention that Lieutenant Williams originally intended to enter his plane in the 1927 Schneider Trophy contest which was held at Venice, Italy, and which was won by Flight Lieut. Webster in a Supermarine Napier monoplane with an average speed of 281.488 m.p.h., and constituted a new world's seaplane speed mark. When it was found that it was impossible to prepare his plane in time for this race Lieutenant Williams substituted pontoons with a ground landing gear, and when sometime later test flights were made it was unofficially estimated that he flew at a speed well over 300 m.p.h. Should Lieutenant Williams be able to duplicate this speed in official tests he will break the world's record of 298.7 m.p.h., established by Major de Bernardi over a three kilometer course at Venice, Italy, several weeks after the Schneider Trophy contest.

Nov. 4, was a day of tragic success. On that date Capt. Hawthorne C. Gray of the Army Air Corps went aloft in a free balloon at Scott Field, Belleville, Ill., and reached a height of 42,470 ft., a height heretofore unattained by man. However, the attempt cost the captain his life. When he was found dead in the basket the following day in the trees near Sparta, Tenn., his oxygen tube had been severed by a knife. At the official investigation it was decided that Captain Gray had accidentally cut the tube while trying to cut away superfluous equipment in order to reach a higher altitude.

On Nov. 15, the Bureau of Standards reported to the War Department that calibration of the barograph revealed that a height of 42,470 ft. had been reached. This height is exactly the same as was reached by the late captain on May 4. But due to the fact that he was forced to jump at 8,000 ft., when his balloon was descending too rapidly, the Federation Aeronautique Internationale at Paris refused to recognize the record. It is expected that the Nov. 4 record will be approved by that aeronautical body.

Colonel Lindbergh Flies to Mexico

The last airplane accomplishment of the year was undertaken and successfully completed by the year's outstanding airman, Col. Charles A. Lindbergh. On noon of Dec. 13, Colonel Lindbergh took the Spirit of St. Louis off Bolling Field, Washington, D. C., and started a 2,031 mi. non-stop flight to Mexico City, Mexico. The time of this flight was 27 hr., 10 min., or approximately six hours less than his famous flight from New York to Paris. At the time of the take off the plane had a full load weighing 4,750 lb., including 368 gal. of gasoline and 15 gal. of oil. Similar to his Paris flight he made another spectacular take off; the weather conditions were none too good and after a run estimated to be almost 2,500 ft., Colonel Lindbergh got the Spirit of St. Louis off the ground, just barely clearing the trees at the far side of the field. According to Colonel Lindbergh himself, this trip was in some ways the most interesting flight he has ever made. He flew blind much of the time and in view of the course he was taking he was forced to fly in darkness for about 13½ hr.

After a short stay in the Mexican capital he will make a tour of Central American and South American countries and return to St. Louis by way of Cuba. With his trans-continental flights, the trans-Atlantic flight, the tour of the country and the Mexican flight it is estimated that Colonel Lindbergh has piloted the Spirit of St. Louis for a distance well over 40,000 mi. The Wright Whirlwind engine has been overhauled only once since it was installed in the plane and that just after it had traveled over 36,000 mi.

What feats will be accomplished by the airplane during 1928 is a matter for speculation, but at this writing final preparations are being made by three sets of American aviators to bring back to America the world's endurance flight record which was captured from Acosta and Chamberlin by the German airmen Edzard and Ristiez on Aug. 5, when they remained aloft in a Junkers J-33-L plane for 52 hr., 53 min., 11 sec. If any of these attempts proves successful the series of airplane accomplishments during 1928, will have begun in exactly the same manner as they did in 1927.

1928 Schneider Contest to be Held in Month of September

IT WAS recently announced by the Royal Aero Club that next year's Schneider Trophy seaplane race will be held in September at Blackpool, Morocambe; the Solent, or Liverpool. It is reported that the British Air Ministry has decided not to allow service pilots to participate in the race next year. Unless the Air Ministry can be induced to reconsider its decision it is held that there is a great danger that Britain will not be represented.

This means that unless the United States, which did not compete this year, decides to re-enter the Italians will be left alone.

It is understood that the British Aero Club has taken a hand in the matter and is bringing every possible influence to bear upon the Air Ministry.

The College of the Air

Derek White, General Manager, has devoted over 14 years to commercial aviation, having learned to fly in the days of "pushers" and having since been connected with various American operators in sales, manufacturing, transport and executive capacities.

Claude Sterling, chief Flying Instructor, is a nationally known transport pilot. During the past 4 years has trained hundreds of pilots now flying throughout America. Before going into instruction work toured the United States with one of the most successful flying circuses in America.

Walter H. Barling, Chief Engineer, is one of the world's greatest aeronautical engineers, having been selected by the U. S. Government to build the largest bombing plane in the world. Was in charge of aeronautical engineering for the British Air Force throughout the war.

Already through its extraordinary facilities, its thoroughness of training and its array of experts, the Marshall School has become famous as the College of the Air. Never before has any school gone to pains and expense such as at this great aeronautical university.

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Plan Air Service at Cherbourg To Connect With Ocean Liners

POSSIBILITIES of an air service at Cherbourg, France, are reported by the Department of Commerce in a statement received from Consul Samuel H. Wilby. It is stated that this proposition is receiving the attention of commercial aviation companies in Europe as a connection with ocean lines.

The initial air service contemplated is a passenger and mail connection from Paris and London with the fast trans-Atlantic liners arriving and departing from Cherbourg. Passengers to whom the element of time is of importance, could by means of a service of hydroplanes and airplanes operating in conjunction with the arrival of fast liners, arrive in Paris five hours earlier and London about six hours earlier than at present.

It is believed that sufficient number of passengers and a sufficient quantity of mail would avail of air service between London and Paris and Cherbourg to make the service feasible from a financial standpoint. The air Union, a French company, and the Imperial Airways, a British company, have studied the feasibility of a service from this port and both companies have expressed their intention of inaugurating such a service when the existing obstacles are removed.

W. A. Mankey Now Chief Engineer Of B. F. Mahoney Aircraft Corp.

W. A. Mankey, former chief draughtsman of the Douglas Company, Santa Monica, Calif., and for the past six weeks with the engineering staff of the B. F. Mahoney Aircraft Corp., has been appointed chief engineer of that company according to officials of the Mahoney Company.

Mr. Mankey, after graduating from the engineering department of Dakota Wesleyan University was employed by the Bureau of Aeronautics, Navy Department to assist in the development of the NC type seaplane. After six years with the Bureau he went to California to work with the Douglas Company.

Since his connection with the B. F. Mahoney Aircraft Corp. a number of improvements have been made on its current production "Brougham" which will be the production type for a number of months.

San Diego Votes a Bond Issue To Establish Triple A Airport

"LINDBERGH FIELD", a downtown airport, was voted by residents of San Diego, Calif., at a recent bond election. It will be a class Triple A airport, available for both land and seaplanes. Work will begin within a month, a chamber of commerce committee announced, and it is expected the airport will be completed by next July.

The bond issue carried four to one, the only bond issue of several on the ballot that received the required two-thirds majority. A statement by W. W. Gibson, president of the San Diego Chapter of the N.A.A. declared that the citizens of San Diego recognize the importance of commercial aviation and its fine possibilities for the future.

As part of the celebration on the day of election at the B. F. Mahoney airport approximately 30 military, naval and civilan airplanes were placed on exhibition and a crowd of several thousand people reviewed them.

F.A.I. Awards World's Airplane Altitude Record to C. C. Champion

OFFICIAL ANNOUNCEMENT was recently made by the Federation Aeronautique Internationale of the World's record for airplanes of 38,474 ft., made by Lieut. C. C. Champion, Jr., U.S.N., on July 25, 1925.

Lieutenant Champion made this record in the Navy "Apache" Shipboard Fighter equipped with a Pratt & Whitney "Wasp" engine. A Root's type supercharger developed by the Natonal Advisory Committee for Aeronautics at its experimental station, Langley Field, Va., was used in conjunction with the Wasp.

It is recalled that Lieutenant Champion, with the same equipment, established the World's altitude record for seaplanes when he reached a height of 37,995 ft. on July 4, 1927. Thus two more major World's records have been brought back to America.

One of the most remarkable features of Lieutenant Champion's World's records has been his personal accomplishment. Several previous experimental flights to very high altitudes were made on the day he established his land plane record. These flights were made for the purpose of making various adjustments to his equipment. All his attempts were very much in the nature of casual routine flying.

"Wasp" engines now hold three World's altitude records in various classes. It will be recalled that a standard Vought "Corsair" equipped with a standard "Wasp" engine, holds World's records for altitude and speed, carrying a load of 500 kg. These splendid performances of the "Wasp" seem to bear out the contention that the air-cooled radial is unexcelled for high altitude performance.

Find Weather Conditions Alright For Key West Seaplane Service

ESTABLISHMENT OF a seaplane service from Key West to the Canal Zone and all Central American ports has been found entirely practicable from a meteorological standpoint, the Assistant Secretary of the Navy for Aeronautics, Edward P. Warner, has announced.

Investigations of weather conditions over this course made by the Hydrographic Office of the Navy Department, Mr. Warner said, have shown that the service could be established. The Navy has undertaken this research, it was explained, with a view of stimulating the inauguration of such a service by commercial interests.

The Navy has already received bids for about 25 PN 10 type seaplanes designed for such a service, and a contract for about 20 such planes will be awarded shortly. It is the object of the Department, to replace the last of the war-time flying boats now in service with new types of flying boats and that other designs for new craft have been submitted.

Aviation Correspondence Course Opened by Rankin Flying School

THE RANKIN Flying School, of Portland, Ore., has added a correspondence course in aviation to its curriculum. It is the first course of its kind in the Northwest. The school now has an enrollment of 180.

The newest member of the school's teaching staff is Edward L. Wells, United States meteorologist in Portland. He will teach meteorology. He retains his government position.

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Crash of the Focke-Wulf "Ente" Not Due to Aerodynamic Design

IN THE Nov. 14, 1927 issue of AVIATION there appeared an article describing the Focke-Wulf "Ente", the German plane of the canard type with the horizontal stabilizing and control surfaces in front of the main wing. In the article it was mentioned that Herr Wulf, designer, builder and pilot of the plane was killed while flying the "Ente". It has since been learned that the accident was due in no way to the aerodynamic design of the plane. The plane was powered with two engines, one on each side of the fuselage under the wing. It seems that Wulf was testing the plane with one engine stopped. In this position it was necessary to have the horizontal stabilizer, which was in front, twisted around to an extreme position with its leading edge at an angle to the leading edge of the main wing. It is reported that while flying in this position that the other engine cut out. As Wulf was at a low altitude the plane came down to the ground before Wulf had an opportunity to readjust the forward stabilizer. The landing was hard but the plane was not damaged to any great extent. Wulf was killed by a loosened bolt striking him in the head.

Three Wasp Three Engined Fokker Planes for Western Air Express

THE ATLANTIC Aircraft Corp., Hasbrouck Heights, N. J., builder of Fokker airplanes has been awarded the contract for the construction of three large passenger monoplanes to be used by the Western Air Express for service between Los Angeles and San Francisco. It will be recalled that the Western Air Express recently obtained an equipment loan from the Daniel Guggenheim Fund for the Promotion of Aeronautics. The planes will be in many ways similar to the standard Fokker F7. They will be powered with three Pratt and Whitney "Wasp" engines and will carry 12 passengers and two pilots in addition to 1,000 lb. of mail or express. The planes have been designed to have a high speed of 143 m.p.h. and a cruising speed of 120 m.p.h. The cruising range will be 500 mi.

The wing of the planes will be identical to that on the Fokker F7 used by Commander Byrd and Lieutenants Maitland and Hegenberger on their trans-oceanic flights. Due to the increased load the fuselage will be entirely different. The contract calls for the three planes to be delivered by April 1, 1928.

Lloyd Stearman Elected to Head Stearman Aircraft Co. of Wichita

LLOYD STEARMAN, designer of the Stearman biplane, has been elected president and general manager of the Stearman Aircraft Company, which recently moved its plant to Wichita, Kan., from Venice, Calif.

Other officials of the company are "Mac" Short, vice-president; Walter P. Innes, Jr., secretary, and Harry Dillon, treasurer. Other directors are C. L. Henderson, J. L. Davidson and Ralph Middlekauf.

The voting trust agreement plan is being used in the administration of the company, the stock being deposited with three trustees who have authority over expenditures. They are Marcellus M. Murdock, Howard Wheeler and George M. Brown.

The Modern Pony Express

STEARMAN Mail planes are flying on the Varney Air Lines and the Colorado division of the Western Air Express. Each airplane is completing six thousand miles of strenuous flying every month.

The Stearman Whirlwind Mail Plane

STEARMAN AIRCRAFT HAVE A PERSONALITY

The Stearman Aircraft Co., Wichita, Kansas

Approve Incorporation of Four Pennsylvania Aviation Concerns

AT A meeting Dec. 12, the Pennsylvania Public Service Commission approved the incorporation of four airplane companies for the transportation of passengers and the hauling of freight. The companies are the first chartered in Pennsylvania as common carriers by airplane.

The Gettysburg Flying Service, a subsidiary of the Potomac Flying Service, Washington, D. C., and the Reading Airways, of Reading Pa. were given permission to start operations at once. The Pennsylvania Aerial Transportation and Express Company, of Wilkes-Barre, and the Noble Aircraft Company, of Pottsville, were told they would be granted the necessary permission as soon as they are in a position to start operations.

The certificates of public convenience granted by the Commission to the four companies will terminate Dec. 6, 1928, unless renewed. The Commission ruled that all equipment, including airports, must conform to standards prescribed by the U. S. Department of Commerce and the State Aeronautics Commission.

The companies also were told they would be required to carry liability insurance covering passengers and the general public, file monthly statements of their business and the number of passengers carried, and confine their sight-seeing trips to points within the state. Conveniences similar to those at railroad stations must be established at each airport. The landing fields, the Commission ruled, must be more than open spaces where planes can land.

Regular service between cities and towns within the state was not provided in the four approvals. Before any company can establish routes connecting cities on regular schedules, additional approvals must be secured by the Commission, it was ruled.

Construction of Emergency Field At Fort Tilden, N. Y., is Approved

THE WAR Department has approved the project for the construction of an emergency landing field at Fort Tilden, N. Y., at a cost of approximately $75,000.

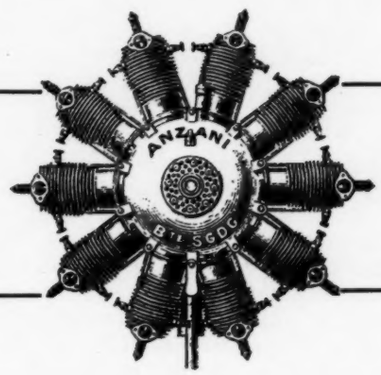
The location of such a field at this point has several advantages. Fort Tilden is on the air route between Bolling Field, D. C., and Mitchel Field, Long Island, and the emergency landing field will make for safety along this route, as during autumn and spring Mitchel Field is often covered with a dense ground fog, when Fort Tilden is free from fog. It will greatly facilitate anti-aircraft target practice at that station and will also assist aerial spotting for the coast defense guns at Forts Tilden and Hancock.

Representative Frothingham Seeks Regulation of Air Corps Exhibits

REPRESENTATIVE FROTHINGHAM of Massachusetts has introduced a bill in the House of Representatives to regulate exhibition flights by the Air Corps. It is provided that no exhibition flights to the public other than those under the control and direction of the War Department shall be made by the Army, and, if any authorized flights be given by Army personnel upon other than government fields, a bond of indemnity shall be furnished the United States by the parties desiring the exhibition in such sum as the Secretary of War may require to cover any claims that may accrue for damages to person or property.

For 1928 THE NEW ANZANI

For the Small Plane



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1. Larger Valves.
2. Side by side Push Rods and Cams.
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4. Greasers on Rocker Arm Pins.
5. Stronger Pistons and oil drainback holes in piston.
6. Higher compression.
7. Improved Thrust Bearings.
8. Radial Ball Bearing to carry Propeller Load.
9. Double Oil Pumps - Pressure and Scavenge with Filter.
10. Oil Slingers on all Shafts to Prevent Leakage.
11. Latest type Ignition.
12. Bigger Breathers.

Pending completion of manufacturing arrangements in the United States, Mr. H. L. Brownback will remain at the ANZANI factory to supervise the production. American manufacturers are thus assured of the utmost in service as regards delivery and all other details.

Price and details on request

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Foreign Aeronautical News Notes

By Special Arrangement with the Transportation Division, Bureau of Foreign and Domestic Commerce

Poland Plans Aviation Expansion

Plans for extending and improving Poland's air service during 1928 are under consideration by the Ministry of Communications. The Danzig-Lodz line is to be extended to serve Katowice, and new services between Warsaw-Katowice, Danzig-Posen (Poznan) and Posen-Lemberg (Lwow) are to be inaugurated. The new Warsaw-Katowice line will connect at Lodz with the Danzig-Katowice service.

Two important trunk line extensions over Poland are also contemplated; namely, from Berlin to Moscow via Posen, Warsaw and Vilno, and from Lemberg to Angora via Bucharest and Constantinople.

It is further announced that the 1928-29 budget of the Ministry of communications will provide several million zlotys (1 zloty equals 11 cents) for the construction of new airports at Posen and Vilno, and for the improvement of existing stations at Warsaw, Lemberg and Rakowice (near Cracow). It is proposed to equip all these airports with underground gasoline tanks and meteorological stations, and also with short-wave radio broadcasting stations. Intermediate landing fields will also be provided in due course along the principal air lines.

Commercial aviation services with Poland are provided mainly by "Aerolot," which operates under a government subsidy.

Santiago del Estero Airport Nears Completion

The Santiago Del Estero Airport is practically completed. It has two hangars with a capacity of five planes each on either side of a central building. The ground floor of the central building contains mechanics' repair shops, sleeping quarters for transient pilots, a dining room, a first aid room, an infirmary, a library, etc. The second floor has meteorological and aerial photography offices, and the top floor is for carrier pigeons. The work on one of the hangars and the central building is practically finished. On the completion of the work, the Aero Club of Santiago del Estero plans to send a plane on a trip covering the 14 provinces of the country.

Planes Used in German Night Advertising

A new method of night-time advertising was demonstrated recently by a three-engined airplane which flew over Hamburg with names of household commodities showing under the lower wing and illuminated by a current generated in the plane. It is said that any name or text can be formed and

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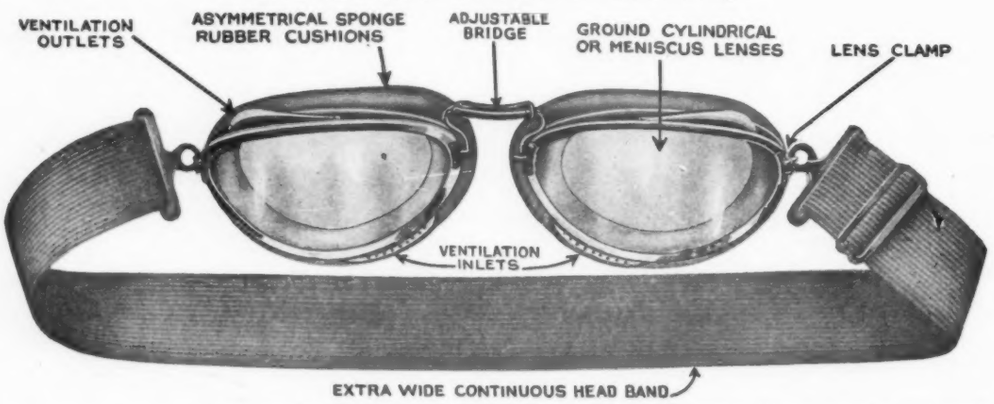

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Foreign Page (Continued)

illuminated in this way to enable it to be read from considerable distances. It is expected that the plan will be followed in other parts of Germany.

Argentine to Buy Two Planes

The President of Argentina has signed a decree authorizing the Director of Civil Aeronautics to purchase two Caudron, model C.97 airplanes. These planes are to be equipped with Hispano-Suiza engines of 180-200 hp. and are purchased with a view to stimulating the activity of civilian institutions in aviation.

New Fuel Gas Tested

Tests are now being conducted by the Zeppelin Works at Stuttgart, Germany, with a new fuel gas for airships which weighs the same as air and therefore does not disturb the balance of the craft when it is used. A report received by the Department of Commerce from the American Consul at Stuttgart, John E. Kehl, states:

The results so far attained are stated to be highly satisfactory. The composition of the new gas, so far as it is perfected is as follows: The main body of the gas is Althylen, which in itself would constitute a satisfactory motor gas. Althylen, however, is a little lighter than air. To overcome this feature, an admixture of a small proportion of another fuel gas of heavier weight, probably butan or one of its numerous derivatives, is being considered. The outstanding advantage of the new fuel gas is, that it will do away with the use of benzine which is not only a source of danger but also a disadvantage to navigation because through consumption of benzine the vessel becomes lighter and therefore requires the discharging of hydrogen of a weight equal to the benzine used. The new gas being about the same weight as air, the weight balance of the ship will not be disturbed through the consumption of gas. However, no mention is made of how fuel gas is to be taken on at stations other than the base.

Johannesburg Club Plane Delivered

The first airplane for the Johannesburg light airplane club arrived recently at Durban, South Africa. The new plane has a 27.6 hp. engine and its landed cost is said to be £850. Another plane is on order.

Winter Persian Air Service

Persian air service will be continued during this winter. Suspensions which may be forced upon the operators by weather conditions will be temporary, according to operating company's announcement.

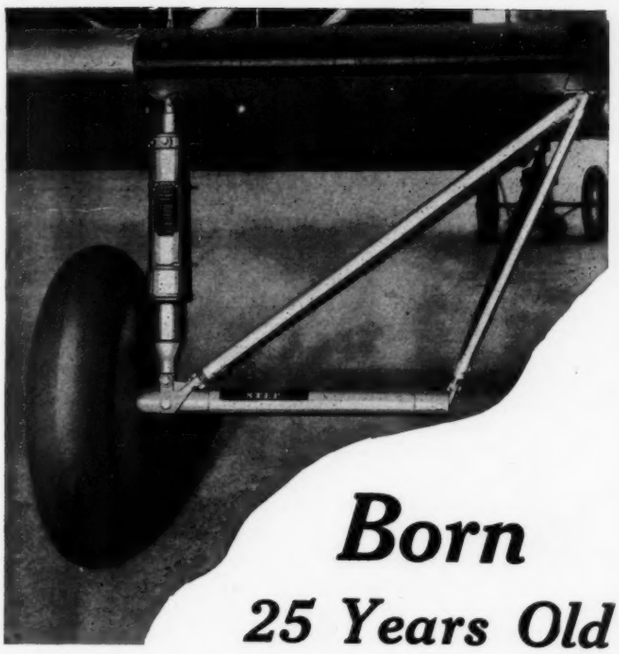
During the third quarter of 1927, the company's plane, carrying four passengers, has flown filled to capacity on every flight in the weekly service between Tabriz and Teheran, Persia.

An additional plane may be added to the Persian service next spring, it is said.

Rio de Janeiro-Porto Alegre Service

Regular air service between Rio de Janeiro and Porto Alegre, Brazil, was begun recently by the Condor Syndikat.

First flight over the route was made by a 10-passenger plane equipped with radio. On its trial trip it carried four passengers, a crew of five, 1,800 liters of gasoline, 100 kilos of grease and oil and various packages. The distance from Florianopolis to Rio de Janeiro was made in 4½ hours.



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When aviation demanded a shock-absorbing landing gear, it was not necessary for us to experiment, but merely develop and apply the principles we had been successfully applying for 25 years.

But even then Aerol Shock Absorbing Struts were not placed upon the market until they had been exhaustively tested and proven on our own plane.

Today there is a set of proven facts on these struts. (1) They absorb, without rebound, shock loads equal to more than twice the weight of the plane. (2) They enable you to taxi smoothly regardless of the condition of the ground. (3) They make forced landings less hazardous. (4) They protect and prolong the life of the plane.

We will gladly send descriptive literature to any interested party.

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AEROL shock absorbing STRUT

PUBLISHER'S NEWS LETTER

At the beginning of a new year there is always a temptation to make resolutions that are soon shelved. Old habits and routine once more become dominant. And then after several such attempts, the procedure becomes more or less of a humorous incident and is commonly so regarded. This applies to private life but in business such a vacillating policy would be disastrous. The enterprise that does not look forward to each new year with plans of expansion, greater hopes and increasing effort will stand still. This is particularly true of a publication. Its usefulness is determined by the service it renders its readers. Advertisers do not pay for space merely to see their products attractively described. They want buying power among readers. They want the good will of a trade. They want to bring this great force in modern selling to bear on their business. And the publication that appeals to the influential and buying reader is their favorite medium. Which all comes back to the publisher's determination to make his paper better and better with each succeeding year.

* * * *

Retrospection often gives suggestions for future planning. When AVIATION was first published over twelve years ago it found a field in aeronautics then unserved and proceeded to give its readers all over the world authoritative technical news. At that time there was not available a course of study covering aeronautic science which could be termed comprehensive and recent. Arrangements were made with those in charge of aeronautical instruction at the Massachusetts Institute of Technology to prepare a series of articles on aerodynamics and airplane engineering which would make available the latest knowledge on the subject. This course was so valuable that it immediately established AVIATION as a source of invaluable aeronautical technical information. Following this came the task of providing news of the latest progress in design of war aircraft in Europe. In spite of foreign censorship restriction this period was one of most important service to the aeronautical industry in preparing for our entry into the great conflict.

* * * *

And then during the War when the great industrial expansion took place, AVIATION served almost as a text book on design, construction and operation. Knowing that the services would need a special paper and believing that publications to be successful should confine themselves to a limited field, The Air Service Journal was published. This gave news of the expanding services every week. When the Armistice came the publishers were confronted by a demobilizing industry. They merged the two papers into one strong weekly. By so doing they gave the best kind of evidence of their belief that fewer publications rendering a broad service are better than many indifferently published papers all attempting to cover the whole field.

* * * *

After the War, AVIATION continued to maintain its position of editorial leadership by making public the results of investigations that it conducted. The "billion dollars aircraft War scandal" which had been so widely spread by disgruntled and disappointed persons was shown to be a myth. AVIATION, after much searching, established the figure for cost of War aviation at about a half a billion dollars, not half of which was spent for aircraft. The current yearly cost to the government of all its aviation activities had always been vague. In spite of the most emphatic protests from many influential officers AVIATION kept adding to the list of costs until they gave a true picture of the large sums appropriated and the need for greater correlation of effort and less duplication. The method inaugurated by AVIATION in figuring expenditures has been used ever since by Washington.

* * * *

Another campaign of usefulness was the glorification of American Aerial Service. This branch of our aviation had always been considered of minor importance when compared with the then future Air Transport. The public thought because we had no air transport that we were far behind Europe in all flying. AVIATION coined the term Aerial Service and after a long investigation proclaimed that the United States led any country in the world in actual flying done. Instead of having to bear the general term "gypsie fliers", the group of Aerial Service operators became a definite entity. They may rightly be regarded as the founders of American Commercial Aviation. The Publisher of AVIATION flew many thousands of miles over the airways of Europe, Asia and Africa and gave the first descriptions of these lines from an informed point of view.

* * * *

A list of other instances of services rendered the government, the industry and the aeronautical profession would cover page after page. That they have been recognized is shown by the constantly growing number of subscribers to AVIATION. At the beginning of the new year, AVIATION has determined on a program of constructive service that it hopes will continue to cause it to be regarded as the most authoritative source of American aeronautical information. Such is the spirit with which we enter 1928, with our large group of friendly readers.

Side Slips

By ROBERT R. OSBORN

"1927 Santa Uses Airplane Express" Headline.
The unhappy part being that for a great many kids this was just another non-stop flight.

• • • •

We take the liberty of reprinting the following clever comment from The Conning Tower column in the New York World, edited by F. P. A.—

"Our Ambassador of Good Will visited the Juarez School where a library in honor of Lincoln is being opened. It came as a surprise to many of us who thought the library would have been erected in honor of Sherman, who said Juarez hell."

We might add, by way of imitation, that Colonel Lindbergh's visit to Juarez was singularly appropriate, as many of us were singing softly to ourselves, while he was wandering along through the dark on this recent non-stop flight, "Juarez My Wandering Boy Tonight?"

• • • •

The committee on airports, which was appointed by Secretary Hoover to make a survey of possible sites for flying fields in the New York area, recently submitted its report, which, on first inspection, appears to be very well done. The committee carefully inspected seventy-two sites and have made formal proposals that six of them be developed immediately.

We would be the last to suggest any delays in the actual purchase and starting of work on any of these new airports, but we would like to call attention to some of the little traditions concerning flying fields which we hope the committee has not overlooked. No airport can be considered a real, genuine, sure-enough flying field unless the following details have been taken care of—

1. The soil must be a tenacious red clay which can maintain a soft putty consistency of mud for ten months in the year, which turns to a fine dry powder for the other two months.

2. Hangars must be arranged so that prevailing winds carry all dust and papers into the buildings.

3. A long winding road is necessary for an approach, which must be laid out with car hazards and bunkers from one to two feet deep.

4. Parking space for automobiles must be provided in front of all hangar doors.

5. Hangars and all buildings must be very dilapidated and must be semi-painted. An expert imitator of antique furniture might be called in as consultant for this work if new buildings are needed.

6. The nearest trolley or train service must be two miles away and no taxi service under one dollar should be permitted.

These may seem unimportant little details, offhand, but cannot be disregarded if our aviators and mechanics are to be happy and contented in their new surroundings.

• • • •

We are glad to see that Colonel Lindbergh attended two bull fights arranged in his honor, in spite of protests from various American societies. Personally, if we had been listening to after-dinner speakers night after night for months and months, the sight of a genuine bull-fighter would be a vast relief.

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La.—Louisiana Airways, 1712 Pere Marquette Bldg., New Orleans
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Utah—Rocky Mountain Airways, Salt Lake City
Tenn. and Ark.—Tri-States Airways, Bry Block, Memphis, Tenn.
Maryland and E. Pennsylvania—E. W. Robertson, Alexandria, Va.
So. Carolina—Errett Williams, Spartanburg, S. C.
Me., N. H., Vt., R. I. and Mass.—Massachusetts Airways Corp., 1597 Main St., Springfield, Mass.
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AIRPORTS AND AIRWAYS

Philadelphia, Pa.

By Ray Krimm

With four passengers and a heavy load of baggage, Robert P. Hewitt, manager of field operations, for the Ludington Flying Service, Philadelphia Airport, left Bolling Field recently at 3:30 P.M., and arrived here at 4:45, making the trip in 1 hr., 15 min. Major Howard F. Wehrle, H. H. Longaker, of Moorestown, N. J., and Mr. and Mrs. William Glose, of Narberth, Pa., were the passengers.

Pilot W. J. Shaffer and mechanic David MacMenamin, the latter on a vacation in Philadelphia, from the Greensboro Municipal Airport, Greensboro, N. C., dropped circulars advertising the Logan Theatre over this city recently.

Sixty members of the University of Pennsylvania Aviation Club visited the Pitcairn aircraft factory, at Bryn Athyn, and took flights at Pitcairn Field, Hallowell, Pa. A. M. Banks and W. J. Shaffer did the piloting.

Jack B. Bartow, assistant manager of field operations at the Philadelphia Airport, flew a new Waco-10 from Washington to Philadelphia, the plane having been ordered by the Ludington Flying Service, airport lessee, and sent as far as Washington by the Advance Aircraft Company. The plane was sold to Jack Casey, of Red Bank, N. J.

The first girl aviation student to make a solo flight in or near Philadelphia was Miss Florence E. Maddock, of Trenton, N. J., who flew by herself for the first time at Pitcairn Field. A few hours before she made her flight, her brother, A. E. Maddock, made his first solo. Both these students were under the instruction of A. M. Banks.

In the largest airplane order given by an aviation organization in the Philadelphia area, the Ludington Philadelphia Flying Service, lessee of the Philadelphia Airport, has purchased 64 Waco-10's from the Advance Aircraft factory at Troy, Ohio.

The deliveries will start early this month, Charles Townsend Ludington, president of the organization, has been advised. Two freight cars will be consigned to the Philadelphia Airport each month, with five dismantled planes in each car.

The Ludington interests have rented a large garage on Tinicum avenue, near the Philadelphia Airport, to store the incoming planes. The company's two hangars at the airport are crowded with Ludington planes owned by Philadelphians, and additional storage space was required.

Some indication of airplane sales at the airport is evidenced in reports for a period of two weeks, which show six planes have been sold by the Ludington organization. The 64 new Wacos will be stored until spring, the company having decided not to allow the situation of last spring, when dozens of prospective buyers attempted to secure immediate deliveries and many sales were lost, to occur again.

A Consolidated PT from Baltimore was flown to the Phila-

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delphia Airport recently by Lieut. Lyman H. Patterson, of the Maryland National Guard. Pilots Smith and Brooks, of Gates Flying Circus, flew two Standard J1s from Teterboro, N. J., to the airport to have engines changed. They were here three days.

With the lighting recently of thirty-four boundary lights around the 111 acres of the Philadelphia Airport, the Ludington Philadelphia Flying Service completed its $12,500 lighting installations. The airport is now ready for night flying.

The boundary lights, 2300 volts each, are red, white and green. The red lights indicate dangerous landing spots or obstructions, such as the large drainage ditch circling the field and nearby high tension wires; the white lights indicate favorable landing spots, while the green lights denote exceptionally good landing areas.

In addition to the boundary lights, the lighting equipment includes a B.B.T. landing floodlight of 500,000,000-candlepower, equipped with its own power plant on the field; floodlights on top of the two Ludington hangars at the airport, a flashing beacon that flashes the letter "P" in the Continental code each night, an illuminated sock, and an illuminated sign bearing the words, "Phila. Airport" in huge letters tilting toward the sky.

The lighting installations were started last June and completed in December.

The sale of Waco 10s to L. B. Cooper, of Bristol, Pa.; Robert Glendenning, Jr., of Philadelphia, and Granville Smith, also of Philadelphia, has been announced by the Ludington Philadelphia Flying Service, at the Philadelphia Airport. The Ludington organization also has sold a Canuck plane, owned by the South Jersey Aviation Club, to Henry Waldheim, of Arlington, N. J.

Boston, Mass.

By Daniel Rochford

With its wonderful work during the New England floods scarcely completed the Boston Airport Corporation found itself faced with the sunken submarine S-4 off Provincetown the night of Saturday, Dec. 17. Chief pilot B. F. Billings routed his mechanics, under the leadership of Jack Tibert, out of their beds and they reported at the hangar at the airport and worked until dawn to have six planes ready to go at 6 A. M. Sunday morning.

The Army reservists at Boston after an absolute lack of flying since the wrecking of their only PT in the Vermont flood work, have received two PTs, one from Bolling Field, which arrived early in December, and the other from Little Rock, Arkansas, flown in by Capt. C. W. Ford, Sunday, Dec. 17. The Army has for its regulars at Boston one Vought, one old DeHavilland, and one Douglas O-2. The airplane shortage situation was so critical that the Boston Transcript's airport column took the matter up vigorously and the Air Corps Reserve Officers Association, through Lieut. Crawford Hollidge, contacted Assistant Secretary of War for Aviation F. Trubee Davison and finally secured the two training planes. The Navy at Boston has had ample aircraft on hand constantly.

Dennison Airport at Atlanta, a Boston suburb, has almost shut down on its flying, its pilots being busied with plans for the new flying field at Providence and for expanded operations throughout New England contemplated for 1928 by the Dennison corporation.

Capt. Horace N. Heisen, commander of the Boston Airport for the past two years, is to be transferred to the West Coast next March and Lieut. Donald Duke of the airways section, Washington, will become airport commander.

Major Gen. Preston Brown, First Corps Area Commander for the Army, has been doing extensive flying since the floods

The Columbia on its way to Germany

Years *of* Progress *in* A Single Year

THE aircraft industry has moved forward by rapid strides during the past year. A greatly increased demand for aircraft found the manufacturers ready. Ready, because the general features of airplane construction were already established, and engines and constructional materials of proven worth were available.

Dartmouth-Tex, the leading grade "A" airplane fabric was available for covering aircraft. It was used on planes that made historic flights during 1927 because of its already proven merit. The Fokker planes of Byrd and Maitland used *Dartmouth-Tex* for fuselage and tail surface coverings. The Bellanca W-B2, later known as the Columbia, was built in 1926 and covered with *Dartmouth-Tex*. This famous plane broke the existing record for sustained flight and then battled the north Atlantic storms on a flight to Germany.

American producers of aircraft who demand quality in every part of their plane use *Dartmouth-Tex*. Among the users of this fabric are Martin, Curtiss, Douglas, Vought, Buhl, Boeing, Travel Air, Stearman and Cessna.

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when he surveyed the states of Vermont and New Hampshire by air.

Colonial took its last Fairchild cabin plane from Boston duty and delivered it to Teterboro to Colonial Western Airways for use on the new Buffalo-Cleveland route. Pilot B. F. Billings, reserve mail flier, and chief for the Boston Airport Corporation, flew the Fairchild to New York.

Aviation Pilot Hersie D. Jennings, who flew 999 hours and 10 minutes in 17 months duty at the Naval Reserve Air Station at Squantum, sailed from New York City Dec. 28 for two years duty at the Naval Air Station at Coco Solo Cristobal, Canal Zone.

Worcester, Mass.

By Henry T. Ford

Interest in aviation continues to grow in this section prompted partly by the establishment of a passenger-carrying depot and flying school by the New England Aircraft Corp., of Hartford, Conn., at Whittall Field, five miles east of Worcester.

The New England Aircraft Corp. recently dedicated the field for the second time with an exhibition of stunts which attracted a crowd of 5,000 people in spite of the fact that the day was cold, bleak and rainy.

The show comprised flights by Percy Spencer, Lieut. R. C. "Kitty" Barrows, president and vice-president of the company, Capt. H. E. Stickney, Lieut. Stewart Chadwick, and a parachute jump by Walter Johnson.

The dedication signalized the opening of the field as a passenger-carrying depot and a flying school and the results have been gratifying to Mr. Spencer. The passenger-carrying business has been good especially on Saturday afternoons and Sunday when 2,500 people make visits to the field.

The flying school is progressing rapidly and six young men of Worcester and vicinity are receiving their training. The instruction courses are given by Captain Stickney and Lieutenant Chadwick who also are piloting the passengers. The students are: George Knowlton, Upton; I. J. Sanborn, Harlan W. Collie, J. H. Reynolds and A. R. Holmes of Worcester and Samuel Rawlinson of Lowell.

In spite of an early winter, the students have been reporting regularly and, according to Captain Stickney, are progressing rapidly. None of the student fliers have done sufficient solo flying to warrant their taking examinations for a pilot's license.

M. Whitin Whittall recently "turned in" his Waco-10 and purchased a five-passenger Fairchild with which he is doing considerable passenger-carrying.

James P. Whittall, brother of M. Whitin Whittall, is flying a Driggs-Dart II, which weighs 380 lb. James P. is an enthusiastic over the behavior of the plane in the air and its speed. He flew the plane from Lansing, Mich., via Toledo and Buffalo to Whittall Field.

Harlan Collie, student flier at Whittall Field, has been appointed sales representative of the New England Aircraft Corp. in this section. Collie is devoting his energies to flying and selling Waco and Fairchild monoplanes.

Percy Spencer is a regular visitor at Whittall Field flying from Hartford twice a week to supervise the school and confer with Captain Stickney and Lieutenant Chadwick.

Springfield, Mass.

By Charles Hanson Gale

A second public hearing on the proposed municipal airport for Springfield was held by the airport committee of the city council at the municipal building recently. No definite action was taken and there has been none since, it is said, although it was felt that considerable progress was made toward the eventual selection of the most favorable site.

The hearing was arranged to give all proposals for air-

port sites equal consideration.

Considerable protest was made by the Berkshire Civic club against the choice of an airport outside the city limits. The club suggested tracts of land bordering Berkshire avenue, Parker street and Wilbraham road, all in this city, as possible sites for development.

Two of the local commercial companies, the Massachusetts Airways and the Springfield Airport company, urged the advantages of their respective fields and stated that they expected to remain where they are now located regardless of where the city desires to build.

Winsor B. Day, president of the Flying Club of Springfield, urged the consideration of the proposed airport from the pilots' point of view and stressed the advisability of building an airport as soon as possible regardless of the location. He felt that the city needed a recognized flying field now and recommended action with the least possible delay.

Roland A. Packard, one of the founders of the Flying Club of Springfield, declared that the airport committee should call in a group of experts to study the situation and recommend the field which appeared to be the best.

The airport committee expects to make a thorough study of the situation and make a recommendation soon.

Lieut. Jack Harding, Lieut. Eric Nelson's plane-mate in the Round-the-World Flight, was the guest of the Flying Club of Springfield at a recent dinner at the Colony Club. He spoke briefly on some of the experiences of the flight and agreed to make a return visit to the club this winter.

Twin Falls, Idaho

An aviation school is being established here. Russell E. Owens, of Newberry, Ind.; James Tate, of Kimberly, Idaho, and Jack Pheland, Arco, Idaho, are the organizers.

Mr. Owens is chief pilot and Mr. Tate will be his assistant, while Mr. Pheland is to be ground man and mechanic.

At first the two planes of John Brockie, commercial pilot of Rupert, 50 miles east of Twin, will be used. With these planes Mr. Owens will do a taxi service.

The Twin Falls Flying School is already boosting for a municipal airport. At present the planes, used by this school, are based at a field 4 miles east of Twin Falls on the Kimberly road. The office of the flying school is located at Rupert.

Six students have now signed up with the school.

Atlanta, Ga.

By John K. Outley, Jr.

Colonel Charles H. Danforth, air officer of the Fourth corps area, stationed at Atlanta for the past three and one half years, has received orders to take command of the Army Pursuit Group at Selfridge Field, Mich.

Colonel Danforth, senior pilot of the Army Air Corps by permanent ranking, is primarily responsible for the establishment of Candler Field, Atlanta's airport.

By choice he came to Atlanta in 1924 after a brilliant record as commander of Langley Field, Va. The officer was given the choice of the Atlanta post, where the Army wanted an adequate landing field built and aviation interest aroused, or the command of a California field.

Having served six years previously at Fort McPherson in Atlanta, Colonel Danforth knew and liked the city and took the post that he was told would be "hard."

Colonel Danforth received his first flying experience at Kelly Field, Tex., when he served as a lieutenant-colonel in the Signal Corps. Later, being transferred to the Air Corps, he was given primary training at Carlstrom Field, Fla., and graduated from the advanced school at Kelly Field.

Winning his promotion to the rank of colonel after enlisting as a private in the Fourth United States volunteers,

Col. Chas. A. Lindbergh in an American Eagle

"A Dandy" said Lindbergh

"It's a dandy", said Col. Lindbergh after flying an American Eagle. Other pilots who have flown this popular light plane have been no less enthusiastic in their praise of the sturdy biplane.

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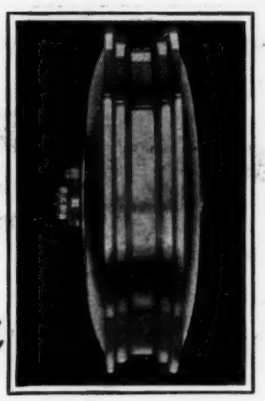

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Colonel Charles A. Lindbergh, in the Spirit of St. Louis, since he left San Diego, California where the famous plane was built, has covered a distance of 34,905 miles, equal nearly to twice the distance around the world. The Wright Whirlwind engine is still in excellent condition and functioning perfectly.

U. S. Hammered Piston Rings are standard equipment on the Whirlwind, the engine with which this and all the other splendid flights of the past year have been made, and have played no small part in making 1927 the greatest year of aeronautical history.

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Irvington, New Jersey

in 1898, Colonel Danforth has had a picturesque career seeing service in such out of the way places as the Islands Mindanao and Jolo.

The colonel will leave to take command at Selfridge within the next two months.

He is a director of the Atlanta chapter of the National Aeronautic Association and has been active in the work of the chapter.

Havana, Cuba

By Euclid D. Miller

The Fokker seaplane purchased by the Cuban Navy, arrived recently, and is at anchor at Trisconia Navy Yard. This plane will be used as an auxiliary for coast patrol and instruction of Naval fliers. Captain Laborde, who accepted it at the New Jersey plant, and flew it to Cuba, will continue in charge of the ship which bears the insignia "M. G. de Cuba". Captain Laborde is well known at U. S. Army fields, and is a splendid pilot.

General Herrera, Commanding officer of the Cuban Army, announced recently that plans to start a flying school at Camp Columbia Flying Field have been completed, and that the authorties at Washington have named an Army Air Mission to report to General Herrera about Feb. 1. Capt. R. Beam, now stationed at March Field, Calif., head of the mission, will arrive in Havana early this month. His junior officers, Lieuts. James M. Gillespie and Jack C. Hodgson, now at San Antonio, Tex., with several experienced non-commissioned officers, will arrive later.

Several new planes will be delivered by that time to supplement the six or eight Army planes that survived the Cyclone of last year, when several hangars were crashed and many new Vought's with Wright Whirlwind engines were destroyed.

Major Edward H. Brainard, piloting a U. S. Marine Corps Fokker 3-engined monoplane, passed over Havana at 9:15 A.M. recently. He was ferrying the plane to the Marine forces in Nicaragua, and dropped a note to Major Ortega, senior officer Cuban aviation, at Camp Columbia Flying Field. It was learned later that he lost considerable time bucking winds in the Caribbean, and it was too late in the evening for him to attempt to cross the mountains into Nicaragua, so he landed at Tela, Honduras, and finished his flight the next morning.

Fort Sill, Okla.

Fort Sill, near Lawton, is making preparations for an air force of officers and men to be stationed at the Oklahoma fort early in the spring. It is expected that at least sixteen heavier-than-air craft will be stationed there.

Fort Myers, Fla.

A standard training plane was purchased by the Peninsular Airways, Inc., and a class of eight students are now in training. The plane is being flown from the Ft. Myers Municipal Airport, which is being operated by the Peninsular Airways, Inc.

The Peninsular Airways, Inc., was organized and incorporated under the state laws of Florida. The officers are Philip A. Roll, president; Hugh A. Seneff, vice-president; Roy E. Larson, secretary. Philip A. Roll is a lieutenant in the Army Reserve and also holds a transport pilot's license. Hugh A. Seneff was formerly chief test mechanic at McCook Field. Roy E. Larson is an ex-chief aerographer of the Naval air service.

A. B. McMullen dropped in from Tampa in his Waco-10 and paid the Peninsular Airways officials a visit. While in Ft. Myers the idea of an Acronautical Trade Association for the state was discussed. Mac made the return trip of 140 mi. in 90 min., making a stop in Sarasota.

Many sight seeing trips above the City of Palms have been made and a number of visitors from the North have

been well pleased with a bird's-eye view of the surrounding tropical foliage. Weather has been ideal every day for flying.

Cincinnati, Ohio

By R. Alvin Hug

Watson Airport, Blue Ash, recently brought to a close the longest and most successful summer flying season it has experienced since its inception over six years ago. Beginning the middle of April, an aerial exhibition was given every Sunday afternoon without interruption until the latter part of November. The unusually fine weather that prevailed on Sundays throughout the summer and fall enabled the pilots of Watson Airport to hang up this excellent record.

Hugh Watson, distributor for Travel Air planes for Ohio, sold an OX-5 job to Everett Woodman of Sabina recently.

Two new OX-5 Travel Airs arrived at Watson Airport, being flown in from Wichita by Green and Wynmiller, both connected with the Travel Air Mfg. Co.

One of the recent cross-country fliers to stop off at the airport was J. M. Anderson, who owns a chain of sixty restaurants in the Middle West. Mr. Anderson flew here from Indianapolis and kept his OX-5 Travel Air at the field for four days while he inspected his restaurants in Cincinnati. He departed for Louisville after finishing his inspection here.

Hugh Watson, assisted by his brother Parks, spent over 20 hours in the air during November securing aerial photos. Several cross-country flights were made to obtain photos of colleges in nearby Ohio towns.

The Continental Airways Company, which has been awarded the contract for carrying the air mail from Louisville to Cleveland, expects to begin operation about the first of March as soon as the government has finished lighting the route. The northbound air mail plane will arrive at Watson Airport about 8:30 P.M. and it is expected that large crowds will drive to the airport every night to see the mail planes land and take-off from the brightly illuminated field. Jack Linn has been experimenting with a paravane device that will enable planes to drop off and take on mail without landing. If it proves successful it may be used to aid planes in cutting down their flying time.

S. G. Irwin, stunt flier who has been at Watson Airport for several months, made a flying tour of Alabama and Georgia during December, including a visit at his home town of Birmingham. He expects to return to the airport sometime after the first of the year.

George Quillen, instructor, has soloed more than thirty-five students this year. He is still busy giving instructions, although the cold weather has cut the roster down a great deal. Quillen had the thrill of a lifetime recently when he made a "live drop" with a parachute loaned by Serg. P. A. DeWeese, noted parachute jumper, who has made weekly drops at Watson Airport during the summer and fall.

Cincinnati voters voiced approval of a new municipal airport when they voted in favor of a $500,000 bond issue for that purpose at the November election. City officials are endeavoring to select a site for the new airport from the dozen locations that have been approved for flying purposes. While the actual location is still uncertain, fliers and citizens have been assured that the municipal airport will be one of the finest in the country.

Milton, Vt.

The field at Milton is owned and operated by Paul Schill. It consists of 40 acres and is on a highway between Burlington and Montpelier. There is one hangar on the field and three planes are used by the owner in passenger carrying and flight instruction. At present the school has been temporarily suspended for the winter, but will resume in the spring.

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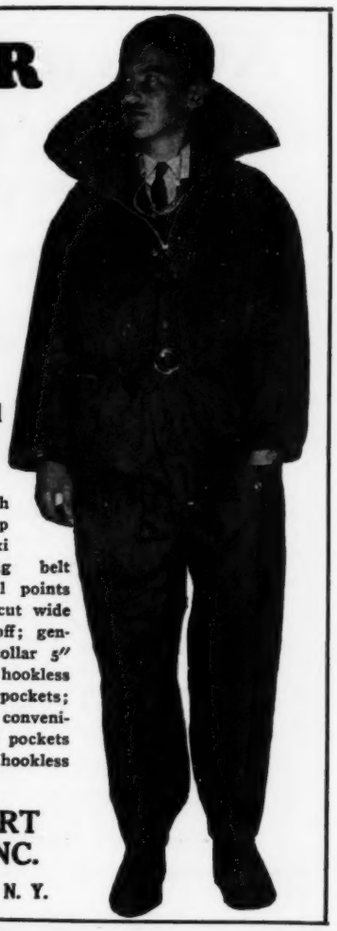

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Lake Charles, La.

The city of Lake Charles, La., has just completed a new landing field.

The entire field, of about 60 acres, has been leveled and graded so that planes can land from any direction. There is a 100 ft. white circle in the center and a wind cone in the north-east corner of the field. Three different buildings in the city are marked with letters twenty by ten feet giving the name of the city and an arrow pointing to the field. The field is right on a main highway and is only one mile and a half from the post office.

The field was opened recently. Two commercial planes and three Douglas O2's from Fort Crockett, Galveston, Tex., were here for the occasion. The commercial fliers were C. M. Drayton of Houston Airways, Inc., the new Eaglerock dealers in Houston, Tex., and Jimmie Wedell, chief pilot of Louisiana Airways, Inc., which holds the distributors franchise for the Eaglerock in this state. Drayton was flying one of his new OX-5 Eaglerocks and Wedell a Hisso Eaglerock. Both planes did a good passenger carrying business and the Army machines gave the crowd a thrill with their formation flying.

New Orleans, La.

The city of New Orleans has a semi-municipal field, seven miles south of town, on the main highway, with a 300 ft. strip of land running to the shore of the Mississippi River. One-half of the main field is now usable and in addition to this there is a 2100 by 300 ft. runway, extending from the main field to the highway.

When leveling and plowing work is completed, the field will be 2100 by 2100 ft. A concrete floor is being installed in the hangar, a lighting system constructed and a dwelling house, with one large dormitory, where visiting pilots can be accommodated, is being built. Meals will be served at a nominal cost. An automobile will soon be purchased to supply transportation to and from the field. There is no landing fee, and gasoline and oil are available, a mechanic being present at all times.

This field is owned and managed by the New Orleans Airport Commission.

Oakland, Calif.

Oakland Municipal Airport was designated by the Post Office Department as the western operating terminus of the Transcontinental San Francisco-Chicago air mail, express and passenger route, and the first eastbound plane took off from that field at 7:00 o'clock on the morning of December 15.

Since the first day of its operations on July 1, last summer, Boeing Air Transport has had its terminus at Crissy Field, except for a three weeks trial of Mills Field at San Bruno on the San Francisco peninsula. Crissy Field was used by special permission from the War Department until such time as an airdrome suitable for scheduled flying in Bay District could be found. Mills Field, though an excellent airport, was not considered suitable for scheduled flying because the air mail planes had to cross a 14-mile stretch of open water, sometimes flying under a low fog ceiling.

Pilot C. K. Vance, veteran air mail pilot, took off with the first eastbound mail from Oakland. Oakland chamber of Commerce and post office officials, Port Commissioners, seven or eight members of the Boeing firm, and newspaper men were on hand for the event.

Calipatria, Calif.

Calipatria is the latest city in Imperial Valley to establish an airplane landing field. A site has been obtained at the north end of the city which extends for a mile east and west.

Duluth, Minn.

The Industrial Promotion Committee of the Junior Chamber of Commerce, with Julius M. Nolte as vice-chairman for aeronautics, has studied the possibilities of establishing an airport in Duluth and in its tentative report recommends a field as close to the natural approaches of the city as practicable, with runways 2,000 by 400 ft. The report further states that the port should be located on the waterfront, accessible to transportation facilities, of a level, water-resisting surface, with as few flying hazards as possible.

As a result of this investigation, a 65-acre site at the foot of 63rd Ave. West was selected. This field meets the qualifications better than any other local site.

The Duluth News Tribune sponsored a model flying contest recently, with the final trials held in the armory. Only two-tenths of a second separated the duration flight of Robert Sasyama, the winner, and that of his nearest competitor. John Rappold, of Chicago, the 1927 national champion model flier, was in Duluth for a week previous to the tournament to instruct the boys in the art of making and flying their models.

Baltimore, Md.

By Harry Prudo

The Airport Commission of Baltimore has earnestly undertaken the work of selecting a permanent site for an airport. The fourteen locations that were under consideration originally have been narrowed down to four. A delegation consisting of Charles F. Goob, chief engineer of Baltimore, H. Findlay French, of the Baltimore Association of Commerce, Howard Bryant, of the Board of Estimates, Major William D. Tipton, commander of the air unit of the Maryland National Guard, and Harvey C. Jones, representing the Port Development Commission, recently visited and inspected the airports at Cleveland and Detroit. They returned enthused with the idea of making a similar, and probably better one in Baltimore.

An attempt will be made to induce airplane manufacturers to locate plants here, and this will be taken into consideration in selecting a field. At least one concern has already voiced its intention of establishing itself here. Among the advantages that have been set forth is the easy access to the north and south, Baltimore being situated approximately midway on the Atlantic Seaboard.

Chicago, Ill.

By H. H. Slawson

Nine new airplanes are being awaited by the 108th observation squadron of the 33rd division, Illinois National Guard. Delivery has been promised in the spring, according to Lieut. W. V. Newhall, commanding the guard hangars at the new municipal airport. Six of the planes will have Wright Whirlwind J-5 engines and will be used for training purposes. The others will be Douglas observation planes with Liberty engines. At present the squadron has five Consolidated PT-1 planes with Hispano 180 hp. engines.

Ozona, Tex.

The only ranches using airplanes in Southwest Texas are located here and at Fort Stockton. Vernon Cox is the plane owner in Ozona and J. C. Develin in Fort Stockton.

McCamey, Tex.

By Sam Ashburn

An airport is being constructed here for use of planes in service in the oil fields and those flying east from Los Angeles, or to that city, via El Paso. The land for the airport has been donated by Albert S. Burleson, former postmaster general. Officials of the Texas Company have been using

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airplanes in flying from Houston to McCamey, and a number of operators in the oil fields have been making regular airplane trips. Among these are Bill Dunning and George Henshaw, of San Angelo.

Portland, Ore.

By John W. Anderson

John W. Allen and I. C. "Hap" Roundtree of the Bell Air Line are making a survey of intermediate landing fields in Eastern Oregon, and studying interest in aeronautics. If conditions are right the line will probably start an air service between Portland and Baker, Ore., with stops at principal cities along the way.

The line has just bought a Spad biplane for use in stunt and advertising work. The plane has been used in San Francisco for sky writing.

Virginia Durkop, paper company employee at Camas, Wash., has enrolled in the Bell Line air school.

Fargo, N. D.

All the planes have been put away for the winter to be overhauled, with the exception of one at the Hector Airport, which is in readiness to be used whenever there is a demand for its services.

Verne L. Roberts, who piloted a Monocoupe as the entry of the Fargo Aeronautic Club in the New York to Spokane National Air Derby, has left Fargo for the winter months to accept a position with the Central States Aero Co. of Davenport, Iowa, who is the manufacturer of this light commercial plane. Roberts will return to Fargo in the spring to resume his activities at the Hector Airport.

The Hanson Auto School is conducting a flying school with E. A. Canfield as instructor. A number of pupils are receiving their ground training at present, but the actual flying will not be done until the spring season opens.

Col. L. H. Brittin, vice-president and general manager of the Northwest Airways, operators of the air mail route between Chicago and the Twin Cities, flew to Fargo in a plane piloted by "Speed" Holman.

The purpose of the trip was to study the territory over which they traveled and the Hector Airport, as well as to confer with the airminded citizens as to the possibility of extending the air mail service to Fargo and later making Winnepeg the terminal of this route.

Buffalo, N. Y.

By Jack O'Bannor

Lieut. Erick Nelson, of the U. S. Army, performed the novel feat of testing three production planes in one day at the Buffalo Airport. The tests were all successful and on Saturday, Dec. 17, 1927, the planes were flown to Mitchel Field, N. Y.

Beloit, Wis.

Both the local American Legion post and the Beloit Commercial Club are cooperating in an effort to give Beloit an airport by spring. The Standard Oil Company intends to mark the roof of its new warehouse with a standard aviation civic indentification sign. Large block letters will be inscribed so that the sign will at once be an identification and a direction indicator.

Kenosha, Wis.

A committee for the purpose of considering sites and ways and means for providing an airport for Kenosha has been appointed by the president of the Kenosha Civic Council. The committee includes Elmer G. Rhenstrom, who was an ace in the air service during the war, and brings to the committee a knowledge of the technical things to be considered in the selection of a site for an airport.

Kohler, Wis.

The municipal airport at Kohler village is rapidly nearing completion, and when finished will be known as Brtz Field in honor of Anton Brotz, research engineer of the Kohler Company, and well known Wisconsin pilot, who is supervising the work of the field. According to the "Kohler News", the field will be one of the most modern in the state, comprising an area of 54 acres.

A large marker will be placed in the center of the field which will be constructed in the form of a circle. A hangar, 36x50 feet of fireproof construction, has been built adjacent to the field and will accommodate several planes, including Mr. Brotz's new one, a Woodson Express.

La Crosse, Wis.

Following the action by the common council of La Crosse of refusing an airport for the city, La Crosse was abandoned as an intermediate landing point on the Chicago-Twin City Airways lines, according to announcement given to postoffice officials by the Northwest Airways, Inc.

Although trying for three years, La Crosse is today officially without an airplane landing field, for by a vote of 12 to 9 the common council threw out the proposal of the Salzer Land Company to sell us their field of 115 acres for $30,000 plus taxes for the year 1926.

Pocatello, Idaho

By Robert Blackstone

This town is not alone bidding for an air mail stop, when the contemplated new air mail line from Salt Lake City, Utah, to Great Falls, Mont., is established, but is so planning its airport that all commercial planes can land on the Pocatello Flying Field with the maximum of safety.

The Aviation Committee of the local chamber of commerce is awaitting the arrival of J. P. Worthington, of the Aeronautics Branch, Department of Commerce, who is expected in Pocatello soon. His final approval of the plans for the proposed enlargement and modernizing of the present field, where planes can land, or the securing of another field, is expected to be the signal for a release of a lot of aeronautic enthusiasm.

The first thing planned to be done is to paint in white the name "Pocatello" in gigantic letters on a large black roof, so all who fly may read.

Caldwell, Idaho

Inclement weather did not halt operations at the Caldwell air field, where workmen have started the erection of shops and hangars. It is planned to push the contract to completion as rapidly as is consistent.

F. Kay, manager of the airplane company, which is located here, already has started classes for students of aviation and Caldwellites are growing accustomed to having a plane soar over their buildings.

Battle Creek, Iowa

The landing field used by Commercial Air, Inc., has an area of 55 acres and can be reached from any direction. It has a 40 foot concrete circle in the center, and the field is in the heart of one of the most modern cities in Western Iowa. Paved streets lead to the field and it is only two and a half blocks to the post office and two blocks from the railroad station and business district.

The hangar on the field is of heavy sheet steel construction with six rolling doors. Gasoline and oil service are available, a Bowser pipe and pump system having been installed.

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UNITED STATES AIR FORCES

First Air Corps Band To Be Formed

The War Department has authorized the organization of the first Air Corps Band, to be stationed at France Field, Panama Canal Zone. This band will have a strength of 28 men, the uniform strength of Army bands.

Wilford G. Archambeault was appointed a Warrant Officer, band leader, and ordered to France Field for duty. He is a graduate of the band leaders' course, Army Music School, and has considerable experience as a band leader. Additional grades and specialists ratings have not yet been authorized for this band, and until such time as such authorization is made the grades and ratings will be furnished from other Air Corps units in the Canal Department.

It is expected that two additional Air Corps bands will be authorized on March 1, 1928, for station at Chanute Field and Kelly Field, respectively.

Record Number of Cadetship Applications

On Dec. 13, 1067 applicants for cadetship at the Army Primary Flying Schools had appeared for examination for the class which enters these schools in March, 1928. As examinations are still being authorized, it is expected that the total number to be examined will reach 1200.

At the present time, accommodations exist at the various flying schools for approximately 300 cadets. One hundred are allotted to the Primary Flying School at Brooks Field, San Antonio, Tex.; 100 to the Primary Flying School at March Field, Riverside, Calif.; and 100 to the Advanced School at Kelly Field, San Antonio, Tex.

Of the 1200 who will be examined for these cadetships but 200 can be selected for primary flying, but, owing to the rigidness of the examination, it is not expected that more than this number will be able to qualify. Should the number who qualify exceed 200, those acquiring the highest rating in the examination up to that number will be selected and the remainder will be held over for a subsequent class.

Under the new Five Year Air Program, it is expected that these schools will be expanded in the near future so as to increase greatly the size of future classes.

Serum Sent By Plane

When questioned by correspondents concerning the movement to have him presented with a medal for distinguished service, following a wild flight from Clover Field to Phoenix Ariz., carrying serum to battle the dread infantile paralysis, Lieut. Walter K. Burgess, commandant of Clover Field, consented to talk on one condition.

This was that the "heroism stuff" be forgotten and the need of every city having a regularly mapped and properly maintained airport or landing field be emphasized. The moving of the field in Phoenix nearly cost Lieut. Burgess and his mechanic their lives and as it was their plane was damaged and the trip nearly came to naught.

Lieutenants Burgess and Brown flew from Clover Field recently with a tube of serum which a Phoenix physician had asked be sent him from Los Angeles. Changing planes at March Field, Riverside, to secure a machine with gasoline capacity for the long trip and encountering head-on winds after ascending at March Field, the fliers were delayed, darkness descending while they were over Gila Bend far from their destination.

Circling Phoenix in inky blackness they sought in vain for the field marked on their map on the north side of the

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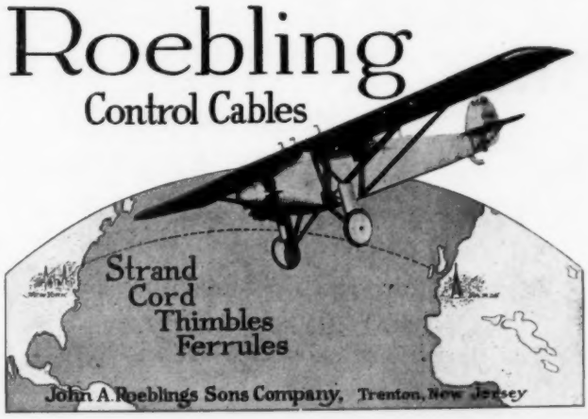

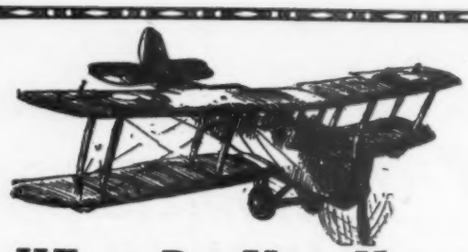

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city. Being unable to find any space below, they finally took a chance on landing in the desert outside the city, steering their craft with difficulty between two mesquite bushes but plunging through a barb wire fence.

A rancher carried them to town and from there, the serum was rushed to the little sufferer on a ranch fifteen miles out of the city, in time, despite delays and handicaps, to save a life.

"We learned later the field had been shifted to the west side of town," said Burgess, "Our experience proves the vital importance of every city having an adequate landing field, properly maintained, lighted at night and mapped. Already hurried trips are becoming more and more common between cities, the plane having demonstrated its usefulness during the Mississippi floods and in enumerable single instances since. Many lives will be saved because of the speed with which surgeons and medical supplies can be transported from supply point to stricken area.

"Every community should have a landing field and see that it is made 100 per cent useful and safe."

Aside from his pleasure at getting the serum there in time, Lieutenant Burgess minimized his feat but Warren McArthur, Jr., president of the Arizona Chapter of the National Aeronautical Association, has initiated a move to have a medal presented Lieutenant Burgess and other merited recognition shown him and his companion.

To Appoint Air Mechanics

The Office of the Chief of Air Corps is completing selections for the appointment of air mechanics, a rating authorized by the Air Corps Act of July 2, 1926, for which the necessary funds became available this fall.

Those enlisted men of the lower grades, particularly qualified in the trades required in the Air Corps, have been given an opportunity to take examination for this rating. The 419 air mechanics, first class, authorized for the fiscal year of 1928 are to be taken from the ranks of sergeant and corporal, 210 and 209, respectively. The 839 remaining of the total of 1258, are to be given to 93 sergeants, 92 corporals, 327 privates first class, and 327 privates, these being known as air mechanics, second class.

The allotment of the ratings and the method of selection were prescribed by recent instructions from the War Department.

Navy Seeks More Pilots

The Department of the Navy has issued the following statement:

To provide for a substantial increase which must be made in the immediate future in the number of qualified naval aviators, the Navy Department has sent a letter to all ships and stations requesting information concerning the physical fitness for aviation training of all commissioned officers on the active list of the Navy of two or more years' service on July 1, 1928.

In the annual physical examination of officers, those whom the medical examiners report are without defects that would disqualify them for training at Pensacola in the actual control of heavier-than-air craft, will be directed to report for examination for aviation training.

The object of this examination is to determine the physical fitness of officers for qualification as naval pilots only, and no recommendations for training as naval aviation observer are desired by the Department. No officer will be ordered to instruction in aviation unless the officer concerned makes written application for it.

There are now 475 naval pilots on duty in the aeronautical organization of the Navy.

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Paris-Pekin (6,560 miles) in 6 days, by Pelletier-Doisy and Carol (450 hp. engine).
Tour of the Eastern Mediterranean (3,750 miles) in 41 hours 50 minutes elapsed time, by Pelletier-Doisy and Gonin (450 hp. engine).
Night crossing of South Atlantic, by Sarmento de Beires (450 hp. geared engine).
Paris-Bombay-Belgrade (9,060 miles) in 89 flying hours by Sondermayer and Baydak (450 hp. engine).
Circuit of Eastern Europe (5,000 miles) in 7 days by Major Weiss and Assolant (450 hp. geared engine).
Circuit of Mediterranean (6,600 miles) in 6 days by Pelletier-Doisy and Gonin (650 hp. geared engine).
Coupe Michelin, 1925 (Captain Pelletier-Doisy), 1927 (Captain Challes).
Coupe Breguet, 1925 (Adjutant Sahuc), 1926 (Adjutant Duroyon).
Serbian Kings Cup 1926 and 1927.

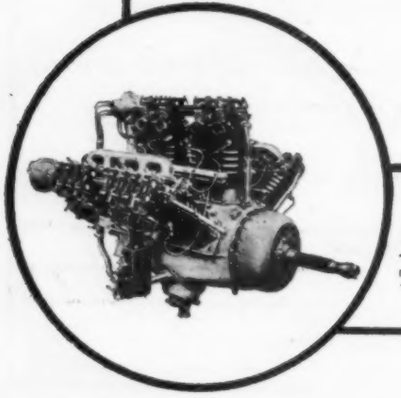
Water Cooled Aviation Engines

400 hp. (12 cylinders arranged in V) 1,450 hp. (12 cylinders arranged in W) direct drive or geared, 480 hp. (12 cylinders arranged in W), 650 hp. (18 cylinders arranged in W), either direct or geared drive.

Air Cooled Aviation Engines

100 hp. (5 cylinder radial), 230 hp. (7 cylinder radial), 470 hp. (14 cylinder radial)

Automobile Engines: 12-15 and 30 hp.—***Gasoline Marine Engines***: 250 and 500 hp.



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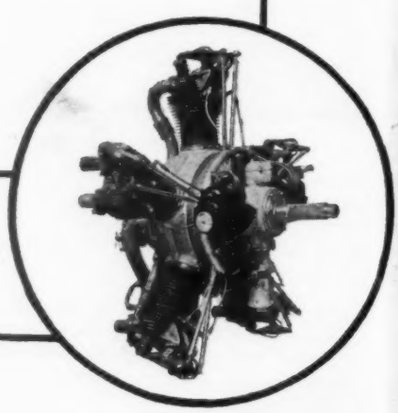

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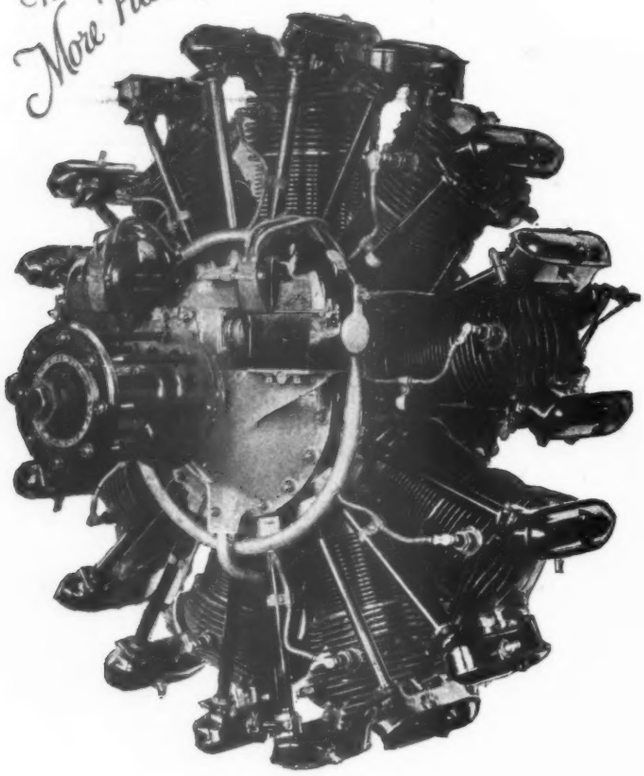

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